THESIS

A CONTEXT-SPECIFIC SOCIAL NORMS INTERVENTION TO REDUCE COLLEGE STUDENT ALCOHOL USE: MANIPULATING REFERENCE GROUPS TO TARGET TAILGATING STUDENTS

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ABSTRACT

A CONTEXT-SPECIFIC SOCIAL NORMS INTERVENTION TO REDUCE COLLEGE STUDENT ALCOHOL USE: MANIPULATING REFERENCE GROUPS TO TARGET TAILGATING STUDENTS

Alcohol use among college students may result in a variety of ill effects for students and their community. The social norms approach is commonly employed to address these issues, targeting individuals' perceptions of normative consumption. However, normative interventions have rarely been implemented in specific situations or contexts that encourage alcohol consumption, when college students need prevention programming the most. Moreover, researchers have often ignored the important gender differences that exist in alcohol use by providing gender-neutral norms. In the current investigation, a randomized controlled trial was conducted in the Fall of 2013 with three experimental conditions: a no-treatment control, a context-specific social norm intervention, and a combined context-specific and gender-specific social norm intervention. Psychology students (N = 216, M_{age} = 19.11, 72.6% female) were exposed to one of the experimental conditions and completed pre-test assessments online 48 hours prior to the football game they intended to tailgate, and then responded to follow-up measures within 7 days after the football game. Results indicate that the combined intervention may be a promising technique for reducing college students' perceived norms and alcohol consumption in tailgating situations. Specifically, students in the combined condition perceived their peers drank less alcohol while tailgating. In addition, females in the context and combined conditions reported consuming less alcohol than participants in the control group. However, due

to small sample sizes in the present study, these effects failed to reach conventional levels of statistical significance. The implications for designing effective normative interventions are discussed.

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Introduction

College students report some of the highest rates of alcohol use and heavy episodic drinking in the United States (Johnston, O'Malley, Bachman, Schulenberg, & Meich, 2014). Consequently, the negative effects of alcohol use, including property damage, injury, and illness, are more prevalent among the college population than among other young adults (Read, Wood, Kahler, Maddock, & Palfai, 2003). University students engage in heavy drinking more frequently than their non-university attending peers (Slutske, 2005; Slutske et al., 2004). One reason may be that students report perceiving that college is a time for engaging in heavy drinking, citing a drinking culture assumed to be pervasive in colleges and universities (Hingson & White, 2010). Accordingly, heavy drinking often occurs during specific events or contexts, such as Spring Break or 21st birthdays, that are associated with the college experience (Neighbors, Spieker, Oster-Aaland, Lewis, & Bergstrom, 2005; Neighbors et al., 2011). For these reasons, intervention methods targeting college students and situations that may encourage excessive alcohol consumption are needed to prevent possible alcohol-related consequences among this population. The purpose of the current investigation is to examine the effectiveness of interventions targeting a university football game. Specifically, the question of interest is whether an intervention using context- and gender-specific descriptive norms will be more effective at reducing college students' alcohol consumption than will an intervention using context-specific and gender-nonspecific messages.

Social norm interventions

To combat the consequences of alcohol use among the college population, interventionists have explored multiple methods for reducing alcohol use and alcohol-related

consequences in the university setting. One of the most popular strategies is the social norms approach. Social norm interventions seek to harness the powerful normative perceptions held by young adults and college students (Perkins & Berkowitz, 1986). These interventions address widely held perceptions regarding alcohol consumption and manipulate these beliefs in a way that results in individuals adjusting their drinking practices (Perkins & Berkowitz, 1986). In order to adjust these misperceptions of typical drinking behaviors, social norm interventions present accurate information about peers' use (Perkins, 2002).

A substantial body of literature has emerged to test and refine the application of social norms theory to the prevention of risky behaviors. These studies have established that perceptions of peer consumption are positively associated with participants' self-reported alcohol use (Clapp & McDonnell, 2000; Perkins, 2002; Perkins & Berkowitz, 1986; Perkins & Wechsler, 1996; Wood, Nagoshi, & Dennis, 1992). Although there are multiple reasons for this association, there is evidence to suggest that perceptions of peer drinking prevalence are predictive of students' alcohol consumption (Perkins, 2002).

Thus, it is problematic that college students consistently misjudge how much their peers consume alcohol (Borsari & Carey, 2003). When questioned about the amount of alcohol they believe their peers are consuming, young adults and college students report higher averages than are represented in the population (Perkins & Berkowitz, 1986; Perkins, Meilman, Leichliter, Cashin, & Presley, 1999). Alarmingly, this overestimation of peer alcohol use is associated with students' reports of their own alcohol consumption (Borsari & Carey, 2003; Perkins & Berkowitz, 1986). Social norms interventions are based on the premise that reducing this overestimation decreases consumption, and many studies have demonstrated the ability for descriptive norm interventions to reduce normative perceptions (Barnett, Far, Mauss, & Miller,

1996; Borsari and Carey, 2000; Haines & Spear, 1996; Walters, 2000). Encouraging students to perceive their peers' alcohol use as lower than they expect may provide an opportunity for students to align with a healthier drinking norm.

An argument against using universal normative interventions, however, is that presenting individuals who are abstainers or light drinkers with normative information might subsequently increase their alcohol consumption because the norms indicate that their peers drink more than they do. Concerns regarding the possibility that an intervention to reduce alcohol use, as well as alcohol-related risks, may result in an increase in drinking behaviors among those who do not drink heavily should not be ignored. Logically, it is impossible to reduce an abstainer's alcohol use, and, if social norms theory is correct, individuals who perceive the norm to be lower than the statistics presented will increase their use to align with the norm, producing what is known as a boomerang effect (Schultz, Nolan, Cialdini, Goldstein, & Griskevicius, 2007). However, researchers have determined that individuals who report abstaining from alcohol use continue to abstain following normative interventions, and those who are light drinkers reduce their use, though to a lesser degree (Haines & Barker, 2003). For example, Perkins (2007) examined differences in normative misperceptions among abstinent and light-drinking students, and the results revealed greater misperceptions regarding normative alcohol use. According to social norm theory, those who overestimated the prevalence of drinking among their peers would be expected to reduce their alcohol use, regardless of their current consumption levels, while those who accurately perceived the norm would not change their drinking rates. In response to possible boomerang effects, many researchers have focused their interventions on those identified as heavy-drinkers. As surveys of tailgating students at Colorado State University have indicated

that over 95% of respondents report drinking while tailgating, the current study will also be targeting at-risk students to reduce concerns of possible boomerang effects.

The predictions made by the social norms approach are theoretically grounded, building on classical paradigms to explain the mechanisms involved, and it is important to understand these mechanisms in order to employ a successful social norm program. Social norms theory proposes people consider their perceptions of others' behaviors when deciding whether or not to engage in a specific act (Perkins & Berkowitz, 1986) and this assumption is derived from conceptualizations of social comparison theory and pluralistic ignorance. The following sections will outline this theoretically driven model and define the differences in normative messages.

Social comparison theory

Social comparison theory suggests that individuals look to similar others for information regarding what behaviors and attitudes are appropriate, engaging in a process known as social comparison (Festinger, 1954). Moreover, the theory suggests that individuals adjust their behavior to match those of the group. In the event that a person does not know how to behave in a particular circumstance, the individual observes the actions of others in order to determine what is expected by the group. However, social comparison theory is a form of normative social influence, as opposed to informational social influence. Normative social influence involves a desire to be accepted by a group, while informational social influence involves a desire to be correct (Deutsch & Gerard, 1955). While the power of normative social influence lies in its ability to motivate people to establish social bonds, informational social influence results in motivations to be accurate in an appraisal or performance (Deutsch & Gerard, 1955). In the case of social comparison theory, the individual seeks approval from a social group, the result being a

sense of belonging and affiliation. Even with these needs for acceptance, people often feel their private beliefs and values do not align with those of others.

Pluralistic ignorance

Social norms theory rests on the assumption of pluralistic ignorance, the common misconception that one's thoughts, feelings, and behaviors vary from the norms of their peers, despite displaying similar behaviors (Katz & Allport, 1928; Miller & McFarland, 1991; Prentice & Miller, 1993; Schroeder & Prentice, 1998). In other words, a student who sits patiently with an engaged expression on her face may think she is the only person in the audience who does not enjoy a presentation by a fellow student, , all the while sharing the same sentiments as the other onlookers. Katz and Allport (1928) used this theory to explain why social norms could be perpetuated despite their lack of approval from constituents. Not only do individuals believe their thoughts deviate from those of their peers, but one particularly interesting facet of this theory is its prediction that people perceive themselves to hold more conservative views than their peers (Shroeder & Prentice, 1998). While individuals privately hold perceptions that are more conservative than they perceive the norm to be, they assume that the private views of their peers are more consistent with the norm (Schroeder & Prentice, 1998). Applied to alcohol-related behavior, one might disapprove of heavy drinking or refrain from engaging in the behavior yet perceive that others do in fact approve of heavy drinking or engage in such actions. In line with social norms theory, research has indicated informing first-year college students of the effects of pluralistic ignorance subsequently reduces their alcohol use (Schroeder & Prentice, 1998). These psychological mechanisms describe the foundations of the social comparison processes underlying the influence of social norms.

Elements of social norms interventions

Social norms theory

Social norms theory states that perceptions of social norms exert influence on individuals' behavior (Perkins & Berkowitz, 1986). This theory was developed to describe the phenomenon of pluralistic ignorance as well as address pervasive misperceptions of health behaviors. According to this theory, misperceptions cause individuals to adopt unhealthy and harmful behaviors in order to align with the norm (Prentice & Miller, 1993). A person's need to reduce discrepancies between perceptions of others' behavior and one's own actions is argued to contribute to the influence of social norms (Clapp & McDonnell, 2000), and social norms theory dictates that this can result in behavioral outcomes, such as alcohol use (Perkins & Berkowitz, 1986). Further, this theory maintains that manipulations of perceived social norms will subsequently result in a change in behavior (Perkins, 2002; Perkins & Berkowitz, 1986). Correcting misperceptions, therefore, is hypothesized to result in reduced risky behavior and increased healthy or protective behaviors. Social norm interventions apply these assumptions to prevention efforts by demonstrating actual prevalence norms to individuals in order to highlight discrepancies between perceptions of others' behaviors and normative behaviors, thereby reducing deleterious behaviors.

Descriptive and injunctive norms

Normative interventions employing social norms theory involve the presentation of statistical information regarding a specific behavior or belief in order to attempt to change current beliefs held by the individual (Perkins, 2002; Perkins & Berkowitz, 1986). These statistics often include the frequency of drinking behaviors over a specified period of time, the

amount of alcohol consumed in a single sitting, and the percentage of individuals who drink (Perkins, 2002). Normative messages can represent two different forms of social norms, descriptive norms and injunctive norms. Descriptive norms simply describe the behavior of others, providing information about how most people act in a certain situation, while injunctive norms involve the acceptability of such behaviors, usually by indicating the percentage of individuals who approve or disapprove of such acts (Cialdini, Reno, & Kallgren, 1990). The Focus Theory of Normative Conduct aligns with the premises of social norms theory, and suggests social norms are always present within the individual, but the salience of the norm determines its ability to affect behavior (Cialdini et al., 1990). According to this theory, social norms should only be effective when the individual is aware of the norm or for whom the norm is relevant (Kallegren, Reno, & Cialdini, 1991).

While descriptive norms are more common in normative interventions, some authors have argued that injunctive norms are more likely to produce behavioral changes (Cialdini et al., 1990; John & Alwyn, 2010). Cialdini and colleagues (1990) maintained that, as normative interventions rely on one's desire to align with beliefs or behaviors of similar others, communicating the approval of certain behaviors will result in increased responsiveness by the individual. A meta-analysis by Borsari and Carey (2003) indicated that a greater discrepancy existed between students' approval of drinking and their perceived approval of drinking by other students than between actual drinking behaviors and perceived drinking behaviors by peers. The authors argued greater discrepancies for injunctive information are expected because the information is less objective, requiring more estimation and reliance on subjective opinion (Borsari & Carey, 2003).

Both descriptive and injunctive approaches have received support, but researchers have suggested that combining the two sources of information can lead to confusion, with participants becoming unable to estimate others' attitudes (Miller & Prentice, 1996). It has been speculated that this issue arises from cognitive processes requiring separate encoding, storing, and retrieval mechanisms for descriptive and injunctive information (Borsari & Carey, 2003). On the other hand, some researchers have suggested the inclusion of both injunctive and descriptive norms can result in a reduced boomerang effect, which occurs when a portion of participants underestimate the prevalence of a behavior and subsequently increase the undesirable behavior (Schultz et al., 2007). Schultz and colleagues (2007) argued the inclusion of an injunctive norm would prevent this boomerang effect by influencing the prominence of the statistic or information, based on assumptions of the Focus Theory of Normative Conduct (Cialdini et al., 1990). Information is cognitively processed more readily when participants' attention is sustained on the norm, according to this theory (Cialdini et al., 1990). Schultz et al. (2007) asserted that injunctive norms influenced the saliency of the normative information for individuals who underestimate the frequency of a given behavior and tested this theory on residential energy consumption. The results aligned with the authors' hypotheses, providing evidence for the constructive power of injunctive norms (Schultz et al., 2007). However, this effect has not been tested in other situations or involving other behaviors and may not be applicable in alcohol-related studies. In addition, the injunctive norm presented by Schultz et al. (2007) was in the form of an emoticon, as opposed to a statement regarding the percentage or number of individuals who approve of such a behavior. For this reason, testing such effects is outside the scope of the current study and descriptive norms will be used exclusively to deliver normative information based on the extensive research to support this method.

Reference groups

There are well-documented gender differences in alcohol use (O'Malley & Johnston, 2002; Wechsler & Nelson, 2001) and gender is a potentially important variable in social norms interventions. Research has indicated that women are more resistant to social norms interventions than men (Prentice & Miller, 1993; Schroeder & Prentice, 1998). However, a limitation to previous social norms research is that the statistics presented in the interventions are often gender-neutral, thereby ignoring the large gender differences that exist in alcohol use. By relying on the use of a gender-neutral average to represent normative feedback, researchers are conveying a descriptive norm that presents an *average alcohol use* to males that is actually well below the male average. This could create credibility issues, which are important for interventions to be successful (Clapp, Lange, Russell, Shillington, & Voas, 2003). In contrast, the gender-neutral average statistics that females see are actually higher than the average alcohol use of females potentially which could dramatically limit the effectiveness of the normative intervention for female college students.

Researchers have found that women demonstrate greater misperceptions of alcohol use, their estimates inaccurately representing other females' use to a greater degree than men (Larimer, Irvine, Kilmer, & Marlatt, 1997), and a meta-analysis by Borsari and Carey (2003) demonstrated that when women report perceptions of alcohol use by same-sex peers, the discrepancy between their assessments and actual rates is greater than for men. As normative interventions for alcohol use rely upon the presentation of statistics regarding the quantity and frequency of alcohol consumption, it is reasonable to expect females to be more heavily influenced by gender-specific norms than gender-neutral norms. Indeed, research has indicated that females' gender-specific normative perceptions are especially strong predictors of students'

own alcohol use compared to men (Lewis & Neighbors, 2004). Therefore, gender-specific normative feedback may be necessary to effectively reduce alcohol use in the female college population.

Gender-specific interventions involve presenting students with data that is drawn from a sample of individuals of the same gender as the participant (Lewis & Neighbors, 2007). Some authors have argued the use of gender-specific norms in interventions is necessary in order to reduce alcohol use among females (Borsari & Carey, 2003). Students tend to harbor gender-specific misperceptions regarding alcohol use, and these normative misperceptions are associated with problematic drinking than misperceptions that were gender-neutral (Lewis & Neighbors, 2004). Interventions employing gender-specific normative information have been effective at reducing students' weekly drinking as well as alcohol-related problems (Lewis, Neighbors, Oster-Aaland, Kirkeby, & Larimer, 2007; Neighbors et al., 2010). Lewis and colleagues (2007) launched a randomized controlled trial investigating the effects of gender-specific personalized normative feedback on freshmen students' (N = 316) drinking behaviors, and their results indicated that the gender-specific intervention resulted in decreased frequency and quantity of alcohol consumption at five month follow-up, while the gender-neutral intervention only decreased reported frequency of alcohol use. Gender-specific perceived norms did not mediate the effects of the intervention on alcohol use, but gender-neutral perceived norms mediated intervention effects on alcohol use (Lewis et al., 2007). Lewis and colleagues (2007) speculated that the use of gender-specific referents resulted in greater reductions in drinking behaviors because they are perceived as more believable than gender-neutral referents. Neighbors et al. (2010) also targeted heavy drinking freshmen (N = 818) using gender-specific personalized normative feedback in a randomized controlled trial, and extended Lewis et al.'s (2007) findings

by evaluating intervention effects longitudinally (i.e., up to 24 months). The results suggested that only the gender-specific feedback reduced weekly drinking, compared to the control condition, but effects were found for biannual administration, as opposed to one-time administration (Lewis et al., 2007). Females were determined to reduce their reported alcohol-related consequences following exposure to the gender-specific feedback, compared to females in the control group (Lewis et al., 2007). Collectively, these studies demonstrated the superiority of gender-specific feedback over gender-neutral feedback, particularly among females.

In contrast to Lewis and colleagues' (2007) and Neighbors and colleagues' (2010) studies, the present investigation sought to examine the effects of gender-specific descriptive norms on drinking behaviors, as opposed to gender-specific personalized normative feedback, which highlights normative discrepancies by providing individuals' percentile rankings for their alcohol consumption compared to peers. Both studies also targeted heavy drinking students, who are more likely to demonstrate discrepancies between their perceived norms and own drinking behavior, whereas the current study aimed to evaluate the effectiveness of gender-specific norms among students who were nondrinkers and light drinkers in addition to heavy drinkers. In addition, Lewis and colleagues' (2007) and Neighbors and colleagues' (2010) investigations determined gender-specific norms produced only small effects on heavy drinking behaviors, which typically occur during contexts and events favorable to alcohol use. The present study aims to quell these concerns by adjusting the normative data to represent contexts that encourage heavy episodic drinking.

Context and event-specific social norms

Attempts to harness the powerful cognitive influence of social norms have involved customizing normative statistics to address specific situations conducive to high-risk drinking

behaviors. Research has indicated that a greater amount of variability can be found in within-person rates of alcohol consumption (i.e., across situations) than in between-person rates of alcohol use (i.e., in the same situation; Armeli et al., 2005). The results presented by Armeli and colleagues (2005) indicated that individuals may demonstrate both large quantities of alcohol consumption and low quantities at different time points during the day or week. Specific days and times, such as holidays, promote alcohol consumption to a greater extent than more general days (Neighbors et al., 2011), and individuals are not only more likely to consume alcohol during these times, but they are also more likely to experience negative consequences resulting from that consumption (Lewis, Lindgren, Fossos, Neighbors, & Oster-Aaland, 2009). Situations associated with alcohol use commonly include vacationing or attending parties to celebrate these events, and substance use has been suggested to be greater during these planned engagements (Grekin, Sher, & Krull, 2007). Such findings suggest that interventionists can benefit from targeting the situations or circumstances that may foster large amounts of alcohol use, but few prevention scientists have implemented and evaluated interventions to target these high-risk timeframes.

Using social norms theory, investigators have recently sought to address event-specific misperceptions using normative feedback (Neighbors, Lee, Lewis, Fossos, & Walter, 2009; Neighbors et al., 2009). Event-specific interventions are designed to target young adult and college student drinking during times in which copious amounts of alcohol are typically consumed, such as 21st birthdays and Spring Break, and involve descriptive norms regarding those particular situations (Lewis et al., 2009). Such interventions seek to correct individuals' misperceptions of the amount of drinking that occurs during these events in order to reduce their consumption during holidays and celebrations, and research has found support for this

hypothesis (Neighbors, Walters et al., 2009). However, no study to date has evaluated the effectiveness of an intervention to reduce context-specific heavy episodic use. Because Neighbors, Oster-Aaland, Bergstrom, and Lewis (2006) determined that students hold misperceptions regarding the amount of alcohol consumed by tailgaters, a test of a context-specific intervention might be well suited for tailgating students. This was the premise of the current study.

The social norms approach to alcohol intervention is largely environmental. As opposed to directly attempting to adjust personal attitudes through persuasive techniques, the social norms approach seeks to provide individuals with accurate information regarding an environmental context (Perkins & Berkowitz, 1986). These contexts can describe the behaviors that are prevalent in one's peer group, constituting a descriptive norm, or they can involve the level of approval one's peer group may have for a specific behavior, an injunctive norm. Regardless of the normative content, they can be presented to individuals in a variety of formats as well as in different locations to reduce alcohol use. The methods for delivering social norms interventions may influence their effectiveness as well as define their target population, and variations in these methods involve different costs and benefits to the intervention's efficacy and effectiveness.

Forms of social norms interventions

Normative messages are delivered using a variety of methods, including the use of face-to-face feedback, campus-wide marketing campaigns, motivational interviewing, peer theatre, and web-based feedback. Although these interventions are all grounded in the same theory, there exist methodological and environmental constraints unique to each form of feedback. In this section, the controversy surrounding normative interventions is reviewed and the different forms of social norms interventions are described and examined for their possible contribution to the

varied results regarding the effectiveness of these interventions. This analysis will provide support for the web-based intervention employed in the present research.

The social norm debate

Normative interventions recently met scrutiny regarding their effectiveness and efficacy in response to reports of failures to reduce alcohol use on college campuses (Carter & Kahnweiler, 2000; Clapp et al., 2003; Cross & Peisner, 2009; DeJong et al., 2009; Granfield, 2002; Granfield, 2005; Peeler, Far, Miller, & Brigham, 2000; Thombs, Dotterer, Olds, Sharp, & Raub, 2010; Werch, Pappas, Carlson, DiClemente, Chally, & Sinder, 2000). In their review of 37 interventions implemented in 1997, 1999, and 2001, Wechsler and colleagues (2003) pointed to deficiencies in the ability of these interventions to reduce a variety of alcohol related behaviors, including quantity of alcohol consumed, frequency of alcohol consumed, and heavy episodic drinking; common drinking behaviors targeted by researchers. An examination of the studies indicated that many of the failed interventions successfully reduced perceptions of peers' behaviors but were unable to reduce the intended behavior (Clapp et al., 2003; Cross & Peisner, 2009; DeJong et al., 2009; Granfield, 2005; Peeler et al., 2000). And, surprisingly, a few studies reported increases in the targeted behaviors (Cross & Peisner, 2009; DeJong et al., 2009; Werch et al., 2000). The failure to subsequently reduce pernicious behaviors calls into question the use of social norms and has prompted researchers to evaluate this increasingly popular intervention method.

Wechsler and colleagues' report concluded with a caution to university administrators regarding the adoption of the intervention technique. In their appraisal, the authors asserted that social norms interventions failed to reduce participants' alcohol consumption and were therefore not a viable solution to the growing concerns regarding college student alcohol use (Wechsler et

al., 2003). A more recent investigation determined that, while there is agreement among researchers regarding the consistency in alcohol use misperceptions, attempts to reduce consumption by correcting this discrepancy have yielded mixed results (John & Alwyn, 2010). Moreover, as Perkins and Linkenbach (2003) pointed out, Wechsler et al.'s (2003) evaluation neglected to acknowledge that many schools that employed normative interventions did not submit data for the year examined, and many of the interventions that were included involved additional methods, such as fear tactics, that are not associated with social norms and may degrade the efficacy of the intervention. In addition, both Wechsler and colleagues' (2003) and John and Alwyn's (2010) critiques largely focused on media campaigns, as opposed to many other forms of normative interventions currently used on university campuses, and may not be reflective of evaluations of normative interventions' effectiveness when delivered using other methods. Although this method of normative information delivery is the most widely employed strategy for reducing alcohol consumption, it carries with it limitations that do not apply to other intervention methods. Researchers and educators seeking to implement social norms interventions should note the costs and benefits associated with differing intervention methods.

A meta-analysis determined that the method of intervention delivery moderated the effects of the intervention such that individual and in-person methods were more effective than those that were computer-delivered (Carey, Scott-Sheldon, Carey, & DeMartini, 2007). In contrast, Moreira, Smith, and Foxcroft (2009) also evaluated differences in effectiveness of web-based interventions, face-to-face feedback, mailed feedback, and media campaigns in a systematic review, and their findings suggested that the ability for these programs to reduce alcohol use varies by these modes of delivery. They concluded that web-based feedback reduced peak BAC, binge drinking, and alcohol-related problems, both web-based and individual face-to-

face feedback reduced drinking frequency, and web-based and group face-to-face feedback reduced drinking quantity and perceived norms (Moreira et al., 2009). Therefore, the different types of normative interventions are reviewed and an argument is presented for the use of web-based methods in the present study.

Media campaigns. Campus-wide media campaigns involve attempting to disseminate normative interventions in form of posters, flyers, and other memorabilia, such as key chains, pencils, or stickers (Jeffrey, Negro, Miller, & Frisone, 2003) and represent the most widely employed form of social norms intervention. In these campaigns, descriptive statistics are often coupled with a catch phrase in an attempt to change misperceptions, such as, "Most [University Name] students have 4 or fewer drinks when they party" (Johannessen & Glider, 2003). In some cases, researchers rely on media outlets to deliver normative information, including student newspapers and radio broadcasts (Haines & Barker, 2003). Perkins and Craig (2003) elected to use screen savers on campus computers to disseminate facts regarding students' alcohol use. Media campaigns often last between six months and one year while the researchers aim to saturate the environment, often a university campus, with these marketing techniques.

Campus-wide media campaigns have been suggested to be the least effective use of normative information. Similar to Wechsler et al.'s (2003) assessment, Moreira et al. (2009) suggested that campus-wide media campaigns demonstrated inconsistent results regarding their ability to reduce drinking behaviors among the college population. While some studies were determined to be successful in their attempts, others were not. However, such investigations may have failed to acknowledge the relation of a study's efficacy, or ability to achieve successful outcomes in ideal circumstances, to their effectiveness. Scribner et al. (2007) highlighted the fact that the failed media campaigns that were examined differed fundamentally from the successful

interventions in their efficacy. Many things can contribute to a media campaign's efficacy, but two major areas have been identified: message saturation and outlet density.

While a few posters planted within a small university may be sufficient to capture participants' attention and reinforce the messages on a regular basis, a large university may not respond as favorably due to a lack of proper message saturation (Berkowitz, 2001). If a university, or any other social community, does not adequately present norms such that individuals recognize and remember the media campaign materials, the messages may not be salient. Message saturation, therefore, is a concern for media campaigns (Clapp et al., 2003). Recognition of message materials is often an issue in campus-wide media campaigns, and in order for these campaigns to be fruitful, institutions may need more funding than is available for this expensive enterprise (Neighbors, 2008).

In addition to saturation barriers, characteristics of the university and the surrounding community may also obfuscate the goals of campus-wide media campaigns, to challenge the misperceptions that contribute to alcohol consumption. In Scribner and colleagues' (2007) review, it was determined that media campaigns conducted in environments with low outlet density were more effective than environments with high outlet density. Outlet density refers to the number of bars, restaurants, or other locations where college students can obtain and consume alcohol, within a two mile radius of the university (Weitzman, Folkman, Folkman & Wechsler, 2003). Outlet density has been demonstrated to be associated with the number of alcoholic beverages consumed by students in the last 30 days (Kuo, Wechsler, Greenberg, & Lee, 2003) and therefore presents a threat to the efficacy of a media campaign. Often locations providing alcohol near or on university campuses offer discounts for students, further threatening the ability for a media campaign to challenge normative beliefs (Kuo et al., 2003). While

campus-wide media campaigns represent one of the most widely used social norms interventions, questions regarding the development of the most efficacious media campaign are outside the scope of this investigation. Here, the purpose is to test the ability of normative information to reduce alcohol abuse among tailgating students, an endeavor that has yet to be evaluated and contributed to the social norm literature. For this reason, a media campaign will not be employed for this study.

Face-to-face feedback. Face-to-face feedback involves either the presence of a research representative during the delivery of the normative information or the representative presenting the information directly (Butler & Correia, 2009). While face-to-face interventions have been evaluated using meta-analytic review and been determined to be effective in reducing college student drinking and alcohol-related consequences (Carey, Scott-Sheldon, Elliot, Garey, & Carey, 2012), these interventions often do not include a normative component. Other systematic reviews have indicated face-to-face feedback had little influence on participants' reports of consumption (Moreira et al., 2009). When a representative is present, the interventions are typically delivered online in a laboratory setting, and interventions that require a researcher to be present during the delivery of normative messages may fall victim to experimenter effects (Rosenthal, 1980). This intervention method can be costly and labor intensive, requiring the staffing of trained counselors and often the use of valuable class time, rendering this intervention method difficult to employ. For these reasons, and because of the nature of the tailgating context, it was not deemed to be practical for the current research.

Mailed feedback. Some researchers have attempted to use greeting cards and mailed flyers to deliver normative messages to students (Neighbors et al., 2005; Walters, 2000). Statistics regarding the prevalence and frequency of student alcohol use are presented either as

text alone or in addition to a cartoon or photograph. Walters (2000) mailed feedback to heavy drinkers comparing self-reported alcohol use and consumption rates by the university population and successfully reduced their drinking behavior, but this study did not result in significant behavioral differences between the control and intervention groups. Similarly, Neighbors et al. (2009) also utilized greeting cards to deliver alcohol-reduction messages without promising results. Moreira and colleagues' (2009) assessment suggested mailed feedback results in little or no reduction in drinking rates, and issues regarding participants' acknowledgement of the messages as well as the costs associated with this method make it difficult to employ on a large scale. Thus, mailed feedback was not considered for use in the present study.

Web-based feedback. Web-based interventions involve the presentation of descriptive or injunctive messages on computer screens by participants using online platforms (Neighbors et al., 2004). As opposed to face-to-face feedback which requires the individual to visit a laboratory or another location for the intervention to be administered, participants in web-based interventions can view the normative information on a computer from a variety of different locations, including the comfort of their own home (Walter, Vader, & Harris, 2007). Such formats allow participants to move through the content of an intervention at their own pace, allow for personalized content to be delivered based on individual characteristics, and provide enhanced feelings of privacy (Carey, Scott-Sheldon, Elliott, Bolles, & Carey, 2009). Web-based interventions have become increasingly popular due to their cost-effective nature and ability to reach large audiences in relatively short periods of time (Cunningham, 2007). In Moreira et al.'s (2009) assessment of normative interventions, it was determined that web-based programs were the only intervention method to consistently decreased alcohol-related behaviors. Moreover, completing assessments online may provide increased perceptions of anonymity and prevent

experimenter effects. In addition to these advantages, it seems plausible that, compared to media campaigns, internet-delivered normative messages would have a greater likelihood of capturing individuals' attention because in order for the normative intervention to be displayed, participants must actively change the computer screen.

Web-based normative interventions may also be ideal for targeting heavy-episodic drinking. Carey et al.'s (2009) meta-analysis indicated that, examining short-term outcomes (i.e., five weeks or less), internet-based interventions reduced alcohol consumption during specific days and time frames conducive to alcohol use, such as specific events or contexts. The present study will, therefore, involve a computer-delivered intervention to reduce consumption among one context-specific window of opportunity for heavy-episodic drinking, specifically, tailgating at university football games.

The "sports fan"

Contenders, spectators, and sponsors contribute to the drinking culture found at sporting events, and alcohol and sports have thus enjoyed a long, synergistic relationship, alcohol consumption fueling the fans and competitors while the games give rise to sponsorship opportunities for breweries and distilleries (Collins & Vamplew, 2002). Consumption to prepare for and enhance performance during competition was common and accepted in the ancient Olympics, Greek competitors routinely consuming beer and wine diluted with water and marathon runners reporting drinking cognac before races (Grandjean, 1997). Today's athletes tend to consume more alcohol than their non-athletic counterparts, although they typically consume illicit drugs and tobacco (Lisha & Sussman, 2010). It is among the fans where alcohol use typically reaches alarming rates in the college population, and research has suggested that two factors greatly influence one's likelihood of drinking and experiencing alcohol-related

problems, environmental support and encouragement as well as personal and demographic variables.

Environmental predictors of sporting event consumption

Sponsorship of sporting events contributes to perceived associations between athletics and alcohol consumption. Considering the influence of commercial time during televised sporting events, American sports fans are more likely to watch commercially supported games while European fans prefer state-run games (Guttman, 1986). Because air time for American sporting event sponsorship is substantially more expensive than European sponsorship, large corporations who can pay the exorbitant fees tend to dominate commercial time, and many of these corporations produce beer and other alcoholic beverages (Guttman, 1986). In fact, alcohol advertisers in the United States report spending $540 million dollars per year to broadcast their commercials during sporting events (Center on Alcohol Marketing and Youth, 2003). Researchers have recently pointed to alcohol advertisements during sporting events as associating heavy drinking with perceptions of success and have raised concerns regarding the prevalence of advertising in sporting contexts (Jones, Phillipson, & Barrie, 2010), and authors have pointed to increased attempts by alcohol advertisers to reach college students, many of whom are underage (Sperber, 2000). In response to studies highlighting the aggressive advertising techniques utilized by alcohol-producing corporations, the Center for Science in the Public Interest (2001) started a campaign to remove alcohol-related advertisements from college athletics. The increasingly nefarious nature of heavy drinking at sporting events motivated researchers and educators to call for increased management of alcohol control strategies at sporting events (Lenk et al., 2010; Lyne & Galloway, 2012) as well as intervention methods for event attendees (Shalala, 1998). Such campaigns were indicative of growing problems and

concerns among university athletics departments, and spawned growing interest in the prevention literature. In addition, research into the situational influence of drinking has suggested the two locations that are most commonly associated with heavy drinking for young males are automobiles and parking lots, and research has documented males' first heavy-drinking episode tends to take place in a public place where they are viewable by others (Snow & Cunningham, 1985). These results suggest tailgating may provide an optimal environment for fostering high rates of alcohol use and highlight a need for interventions to address such drinking.

Personal predictors of sporting event consumption

Research has uncovered that while environmental factors influence rates of heavy episodic alcohol use in sporting contexts, personal factors also account for the high rates of drinking at sporting events. Sports fans tend to be European American males, first-year students, and members of Greek organizations (Nelson & Wechsler, 2003). Not coincidentally, this age group, gender, and ethnic composition have been demonstrated to be associated with higher levels of alcohol consumption than the typical college student population (Carter & Kahnweiler, 2000; Sperber, 2000). When asked about high school drinking, sports fans are more likely to report having engaged in heavy drinking (Nelson & Wechsler, 2003), indicating that this behavior may not be specific to university attendance.

Several alcohol-related consequences have been associated with sports fan identification. Self-proclaimed sports fans consume alcohol at higher rates and quantities and are subsequently more likely to experience health, social, and personal negative consequences as a result of drinking (Nelson & Wechsler, 2003). When surveyed, sporting event attendees report social motivations for alcohol use, such as seeking to socialize with new people and maintain current friendships (Pegg, Patterson, & Axelsen, 2011). In addition, sports fans are more likely to spend

time socializing than non-sports fans (Nelson & Wechsler, 2003). However, regarding the gaming context, even self-reported football fans consume more alcohol on game day than they do while partying or celebrating a non-sports-related event (Glassman, Werch, Jobli, & Bian, 2007). And, accordingly, the previously discussed negative consequences that arise from drinking are also more commonly reported by tailgaters of athletic events, including hangovers, vomiting, injury, altercations, drinking and driving, memory loss, and sexual abuse or exploitation (Glassman, Dodd, Sheu, Rienzo, & Wagenaar, 2010). In addition, second-hand effects of sports fan drinking affect students from universities classified as sports schools: They are more likely to experience the negative effects typically associated with high rates of alcohol consumption, including being assaulted, having property damaged, and experiencing an unwanted sexual advance, regardless of their drinking rates (Nelson & Wechsler, 2003). While alcohol consumption is related to a variety of negative effects, sports affiliation's association with high rates of alcohol consumption increases these risks. Tailgating, then, provides an ideal circumstance for testing the effects of an intervention to reduce context-specific alcohol consumption by college students.

Therein lies the need assessment of the interaction of personal and environmental variables in sporting event contexts to determine alcohol use. Examining heavy episodic drinking in sporting contexts, research has suggested that drinking in public places is viewed as a rite of passage of sorts for males, demonstrating their ability to participate in activities considered masculine (Burns, 1980). For this reason, it is important to note and address the gender differences that may account for and influence individuals' consumption during these context-specific windows of risk.

The Current Research

The present investigation proposes to combine context- and gender-specific interventions to reduce alcohol use among college students in contexts associated with high rates of alcohol use- namely, a university football game. While context-specific misperceptions of alcohol use have been established (Neighbors et al., 2006), no study to date has tested the effectiveness of a social norms intervention within the context of tailgating. In addition, this investigation seeks to expand theory regarding normative interventions by assessing the effectiveness of a combined context- and gender-specific normative feedback intervention (COMBINED) for tailgating college students and a context-specific intervention (CONTEXT) alone. The COMBINED intervention will involve presenting participants with descriptive norms regarding female or male drinking during Colorado State University football games while the CONTEXT intervention will involve aggregate data across genders. The two descriptive norms will include the percentage of individuals who engage in alcohol consumption during football games and the average number of alcoholic drinks consumed during these events. In addition to comparing the CONTEXT and COMBINED conditions' effectiveness, a third comparison condition was also included in which participants completed only the pre-test and post-test measures without receiving any intervention (CONTROL).

The purpose of this investigation is to test a new intervention for contexts that commonly foster alcohol use among college students and to reduce concerns regarding the effectiveness and efficacy of normative interventions. To do so, the current study will involve gender-specific normative information delivered using an online platform. As many normative interventions have failed to reduce female drinking rates, it is important to determine methods for targeting this student population. Therefore, this study will seek to determine if gender-specific norms will

reduce this population's consumption during situations that are conducive to heavy episodic drinking as researchers have argued that gender-specific information may be necessary for reducing females' alcohol use (Borsari & Carey, 2003).Web-based feedback will be used to avoid the issues associated with other methods of intervention delivery as well as in response to recent suggestions that it may be the most effective way to deliver normative messages (Moreira et al., 2009). Not only do web-based interventions require less funding and prevent experimenter effects, they also may also thwart many of the previously discussed threats to the efficacy of normative interventions. Therefore, this study aims to provide support for normative interventions and the following hypotheses will be assessed.

H_1: CONTEXT participants will report lower levels of alcohol use at the game than CONTROL participants.

H_2: Participants in the COMBINED intervention condition will report lower levels of alcohol use at the game, compared to the CONTROL condition.

H_3: CONTEXT participants will report lower estimates of descriptive norms regarding peer alcohol use than will CONTROL participants.

H_4: Participants in the COMBINED condition will report lower estimates of same-sex peer alcohol use than participants in the CONTROL condition.

H_5: Perceived norms regarding peers' alcohol use while tailgating will mediate the relationship between the intervention condition and participants' alcohol use.

H_6: The effect of the COMBINED intervention on self-reported alcohol use will be moderated by gender such that greater differences in alcohol use between the COMBINED and CONTROL conditions are expected for females than males.

Method

Participants

Attendees and tailgaters (N = 253, M_{age} = 19.08, 72.4% female) of each home football game during the fall semester of 2013 were targeted for this study. The majority (83.5%) of participants were non-Hispanic White, with 9.5% of students indicating they were Hispanic/Latino, 2.1% indicating they were Asian, and 1.6% identifying as Black/African American. Most (63.4%) of the participants were first-year students, 16.9% were second-year students, 15.2% were third-year students, 3.3% were fourth-year students, and 1.2% indicated they had spent more than four years in university. Only 16% of students participated in Greek life, and 63.8% lived in the residence halls.

Psychology students were recruited using three different methods: 1) the university psychology research pool; this research pool consists of students who are enrolled in general psychology and research methods in psychology courses at the institution and provides students the opportunity to earn course credit for their participation in research projects hosted by the psychology department. 2) The distribution of flyers at first-year seminars for incoming students; the primary investigator addressed the seminars in-person and handed out flyers to all interested students. 3) Flyers containing information regarding the study were posted throughout the university's campus.

The flyer distributed to students during first-year seminar classes and on campus directed individuals to an online website where they signed up to participate in the study and later complete pre-test and follow-up measures. This flyer also informed potential participants they needed to intend to tailgate at least one of the home football games to participate. Participants

were instructed to provide contact information in the form of an e-mail address in order to be administered the intervention as well as follow-up measures after the event. All individuals who indicated intent to tailgate one or more home games were included in the study.

Participants from the research pool received course credit and were given the option to enter into a drawing for two gift cards to a popular online shopping site. This research pool is hosted by the university's psychology department, and allows students to earn course credit for their introductory psychology or research methods courses in lieu of a paper requirement. Other participants were given the chance to win gift cards only. Half a course credit or one gift card were offered for pre-test assessments, which included the intervention, and half a course credit and one gift card were offered for the completion of follow-up measures.

Procedures

All measures and the intervention were completed online, ensuring the uniform delivery of the normative messages. When participants accessed the survey link provided on flyers, they were prompted to indicate their consent to participate in the research. Once within the survey, participants were first asked to create an identification code comprised of the month and day of their birthday as well as the first three letters of the name of the high school from which they graduated. Students were also required to indicate the next football game they planned to attend. Participants also provided a primary e-mail address in order to be contacted at a later time to complete the pre-test and follow-up questionnaire in addition to receiving a notification of the football game they planned to tailgate. The pre-test measures were hosted by Qualtrics and were sent to participants 48 hours before midnight the day before the football game. Post-test measures, also housed by Qualtrics, were sent to participants the morning following the football game and were available for 7 days. All participants were thanked and debriefed.

Because normative measures rely on the assumption that individuals seek to behave in ways that correspond to their social environment, a laboratory in a university might be conducive to social desirability motives and produce experimenter effects (Rosenthal, 1980). While this prevents control of students' environment when they are exposed to the intervention, online assessments provide increased perceptions of anonymity. Alcohol-related questions can cause discomfort in some individuals when measures and interventions are administered in a laboratory setting, particularly when an experimenter is present, and web-based interventions may offer increased perceptions of privacy (Carey et al., 2009). Instead, this study involved a computer-based intervention, completed using any computer with internet access and at participants' convenience.

Interventions

Three hundred participants were randomly assigned to one of three conditions: a CONTROL group, a CONTEXT intervention group, and a COMBINED intervention group. All three groups completed measures both before and after the football game. The CONTROL group completed all measures but was not exposed to an intervention. Random assignment was constrained such that males and females were randomly assigned to intervention condition separately.

Both normative interventions involved presenting participants with descriptive norms regarding college student drinking at a typical football game (i.e., context-specific norms). Statistics were preceded by a message informing participants of the source of the data, an in-person survey conducted at a typical university football game the previous year. This message indicates data was collected by trained research assistants associated with the university's psychology department in order to enhance perceptions of credibility. All descriptive norms were

taken from a survey that was administered at a CSU football game September 22, 2012. Each statistic was presented for 10 seconds during which time participants were not able to advance to the next screen in order increase the likelihood that participants read the normative messages. The interventions were delivered within 48 hours of the football game to ensure the saliency of the normative information during the day of the football game as previous research has found normative data to be effective for event-specific normative feedback when presented with 48 hours of the event (Neighbors et al., 2009). For participants assigned to the COMBINED intervention, the statistics represented other tailgaters of the same sex such that females were presented with statistics specific to other females and males were presented with statistics specific to other males (see Figure 1). In contrast, the CONTEXT intervention presented gender –neutral normative information (i.e., averaged alcohol consumption data collected from both genders) to males and females.

Measures

Typical drinking. During both the pre-test and post-tests, participants recorded their weekly drinking behavior by completing the Daily Drinking Questionnaire (Collins, Parks, & Marlatt, 1985). As it has been demonstrated that an individual's typical rates of alcohol consumption are predictive of their event-specific drinking (Neighbors et al., 2009b), participants' responses to the DDQ (Collins et al., 1985) were measured as a control variable. In this measure, participants estimated how much alcohol they have consumed and over what period of time the alcohol was consumed for each day of the week for the three months prior to the study. Participants were asked to consider their drinking during the last 3 months, and, based on these considerations, were asked to report how much they believe they typically drink on each day of the week. Weekly drinking scores were calculated by combining the average scores for

each day for each week, such that each week was represented by a single score comprised of an average of all weekday scores for that week. Final scores consist of an average number of drinks per week for the specified three months.

Game day drinking. Participants reported their game day drinking by responding to a single, open-response item indicating the total number of alcoholic beverages they consumed during the day and night of the football game.

Best friends' drinking. During pre-test assessments, participants' perceptions of the typical drinking practices of their best friend were assessed. This comprised a control variable to reflect the literature suggesting best friends' drinking rates are predictive of one's self-reported drinking (Borsari & Carey, 2001). To do so, participants were provided with a weekly chart and asked to indicate how much alcohol they believe their best friend typically consumes on each day of the week. Responses were added to determine the perceived drinking rates of participants' best friend on a weekly basis.

Perceived norms. Perceived norms were assessed using three items administered with both pre-test and post-test measures. Two items addressed the individual's perception of the quantity of alcohol consumed by a typical student during the football game as well as the amount consumed by males and females. The item assessing typical drinking is as follows, "How many alcoholic drinks do you think the average CSU student drinks while tailgating football games?" Gender-specific referents were used in the second and third items. Answers were provided in the form of numerical input from the participant, indicating the number of drinks consumed during the day and night of the football game.

Perceived credibility. Within follow-up assessments, participants assigned to one of the two intervention conditions reported their perceptions of the credibility and believability of

normative information as it has been demonstrated to positively influence the effectiveness of social norms interventions by Clapp and colleagues (2003). In contrast to most previous studies that have relied on single-item measures, in the present study, items from Slater and Rouner (1996) and Witte (1992) were adapted to reflect responses to the normative statistics presented in the two interventions. To evaluate message derogation, five questions required participants to report how exaggerated/not at all exaggerated, distorted/not at all distorted, overblown/not at all overblown, boring/interesting, overstated/not at all overstated they found the statistics, and two questions had participants indicate whether they felt manipulated or exploited by the messages (Witte, 1992). In addition, the believability, message quality, and perceived persuasiveness of the normative messages were also measured. The 17 items, adapted from Slater and Rouner (1996), measured these perceptions on a five-point likert-type scale (1 = *strongly disagree*, 5 = *strongly agree*). Responses were averaged to create a composite with total scores ranging from 1 to 5.

Drinking intentions. Intended alcohol consumption during the football game was recorded with two items at pre-test. These items addressed how many drinks participants intended to consume on the day of the event, as well as the time period in which students planned to consume those drinks. Drinks were defined as 12 ounces of beer, 5 ounces of wine, and 1.5 ounces of liquor, as specified by the National Institutes of Health. This measure was modified in order to assess drinking during the specified football game. Items included, "How many drinks do you plan to drink while tailgating at the event?" and "For how many hours do you plan to drink while tailgating for the football game?" Participants provided numerical input from 1 to 40 in a text-box for both items.

Plans for the event. Participants reported their plans for the day of the event, and the amount of alcohol consumed during each activity. First, participants indicated whether they had

made any of the following plans for the day of the event: tailgating, attending football game, visiting a friends' house before the event, visiting with friends or family at a bar or restaurant before the event, celebrating at a friends' house after the game, or celebrating with friends at a bar or restaurant after the game. After indicating their intentions to engage in these activities, participants recorded the number of drinks they planned to consume during each activity they identified.

Public self-consciousness. To measure participants' need for positive self-presentation, the seven-item public self-consciousness subscale from Fenigstein, Scheier, and Buss' (1975) self-consciousness scale was administered. These items were measured on a five-point scale (1 = *extremely uncharacteristic* and 5 *extremely characteristic*). Items included: "I'm concerned about the way I present myself" and "I'm usually aware of my appearance." Higher scores on this subscale indicate higher attention paid to one's presentation in public.

Exposure to other alcohol programming. During the post-test, participants indicated whether or not they were exposed to two alcohol intervention programs currently employed by the university: interaction with the CREWS team and the Alcohol.edu program. A group of trained undergraduate students from a variety of majors comprises the university's CREWS (Creating Respect, Educating Wellness by and for Students) team. Volunteer students who are part of the university's CREWS team routinely approach tailgating students and ask them about their safe-drinking practices. This team does not implement an intervention to reduce alcohol use, but simply encourages tailgaters to engage in safe-drinking practices, such as alternating water with alcohol. Because interaction with these individuals may influence participants' alcohol use, whether or not participants were approached by a member of the team was also entered into the initial regression model as a control variable. In order to assess whether or not

participants were approached by a member of the CREWS team, participants responded "Yes" or "No" to the following question: "While at the football game, were you approached by a student from the CREWS team giving beads to people tailgating the football game (sometimes referred to as Bead Ladies)?"

In addition to CREWS exposure, completion of the Alcohol.edu program was also measured. Alcohol.edu is a web-based program that is administered to all incoming first-year students and includes a variety of interactive and survey-based activities in order to reduce their alcohol use. Participants responded to the following item using the responses "Yes" or "No" to determine whether or not they had recently completed the assessment, "Have you completed Alcohol.edu in the last year?"

Greek membership. Participants reported whether they are currently affiliated with a sorority or fraternity and whether or not they currently reside in a fraternity or sorority house using the same response set. Participants' Greek membership status, including whether or not they reside in a Greek house, was considered as a control variable as Greek students have been demonstrated to be unresponsive to normative interventions targeted at the general student population (Haines, 1997) as well as maintain higher perceptions of drinking rates than non-Greek students (Carter & Kahnweiler, 2000).

Intentions to tailgate. Within the pre-test assessment, participants were asked to report their likelihood of tailgating at the football game with the item, "How likely do you think you are to tailgate the football game?" Responses were measured on a 7-point likert type scale (1 = *very likely*, 5 = *not at all likely*).

Intentions to complete follow-up. During pre-test measures, participants indicated the degree to which they intended to complete the follow-up assessments with a single item. Participants responded to the question, “How certain are you that you will take the final survey after the football game?” on a 5-point likert type scale (1 = *very certain* to 5 = *not at all certain*).

Analytic Strategy

Modeling count data

Count data are frequently collected by social scientists. The number of drinks a student consumes, the number of pens an employee steals, and the number of trips to an emergency room are all examples of count data that are collected by psychologists. Researchers typically rely on ordinary least squares regression (OLS) to analyze these data. Unfortunately, OLS regression is usually inappropriate as count data are typically non-normal and heteroskedastic (Atkins & Gallop, 2007). In other words, the frequencies of these occurrences rarely exemplify the bell curve representing a normal distribution, often positively skewed with most frequencies stacked at or near zero, and the variances are unequal across groups. Most students do not drink, most employees do not steal pens, and most people do not visit the emergency room. Attempting to model associations of this sort violates fundamental assumptions of OLS regression. Poisson regression is uniquely equipped to handle count data, and zero-inflated models allow researchers to simultaneously model excess zeros as well as associations among key variables.

Model testing

One assumption of Poisson regression is that the dependent variable's conditional mean should equal the variance. Overdispersion is a common concern regarding Poisson regression, and occurs when the conditional variance exceeds the conditional mean (Cameron & Trivedi, 2013). Failure to address overdispersion can result in inflated standard errors and *t* statistics. This means researchers and clinicians may obtain spurious results. Zero-inflated models should be employed in these circumstances as they examine the excess zeros within the logistic portions of the models while still allowing researchers to assess linear changes in the count portions of the

model. These models can assume a Poisson or a negative binomial (NB) distribution, and can be zero-altered, resulting in the use of zero-inflated Poisson (ZIP) or zero-inflated negative binomial (ZINB) models. In the present study, model fit was determined following the recommendations of Atkins and Gallop (2007).

In the present study, the data were determined to be non-normal (S = 2.06, K = 8.83) with a large number of zeros (see Table 1). To test model fit, the following analyses were conducted on the conditional model, which included the following variables: intervention condition, gender, and typical drinking. To determine whether the current alcohol use data were overdispersed, a likelihood ratio (LR) test was conducted and did not indicate that a negative binomial distribution was required ($\chi^2(1) = 1.51$, $p < .001$). Vuong tests for non-nested models suggested that the ZIP model was preferable to the NB model ($V = 12.30$, $p < .001$), and the ZINB model was preferable to the NB model ($V = 8.71$, $p < .001$), but the ZINB model was not a significant improvement to the ZIP model ($V = -0.75$, $p = .23$). Regarding perceptions of others' alcohol use, the data were not determined to be overdispersed ($\chi^2(1) = -0.003$, $p = .50$), but a test of deviance indicated the NB model was a superior fit, compared to a Poisson model ($\chi^2(1, N = 212) = 101.94$, $p = .003$). Therefore, the following analyses used ZIP models to assess alcohol use on game day, while NB regression was used to model perceptions of peers' alcohol use on game day. Mediation was assessed following the procedures outlined by Preacher and Hayes (2008).

Because participants attended one of six games throughout the semester, the intraclass correlation coefficient (ICC) was estimated to determine how much variability in game day drinking could be accounted for by game attended. The ICC suggested about 3% of the variance was associated with game attended, although not statistically significant (95% CI[-0.01, 0.34]).

Inclusion of game attended within the following analyses did not change interpretations and was, therefore, left out of the models.

Results

Descriptive Statistics

Of the 253 participants who completed the pre-test measure, 14.5% identified as nondrinkers on the typical drinking measure. Participants who identified as drinkers reported consuming an average of 1.22 (SD = 1.13) drinks per week. At pre-test, 17.8% of CONTROL participants, 14.7% of CONTEXT participants, and 11.1% of COMBINED participants indicated they were nondrinkers. The distributions of nondrinkers across the three conditions were not determined to be significantly different (Pearson Chi-square = 1.49, p = .48). The average number of drinks per week consumed varied slightly across conditions ($M_{CONTROL}$ = 1.23, SD = 1.28; $M_{CONTEXT}$ = 1.29, SD = 1.02; $M_{COMBINED}$ = 1.16, SD = 1.12), but these differences were also not determined to be statistically significant (F(2, 197) = 0.22, p = .80). Finally, typical drinking was significantly correlated with game day drinking (r = .49, p < .001), and was controlled for in the following analyses.

A total of 24 participants were lost to attrition between the pre-test and the post-test assessment (9.5%), and these participants were not determined to differ from participants who completed the post-test in levels of typical drinking (t(239) = -0.48, p = .63), gender (t(240) = 0.31, p = .76), Greek status (t(235) = 1.26, p = .21), student status (t(241) = -0.21, p = .84), or athletic involvement (t(241) = 0.39, p = .70). In addition, 13 participants' IDs could not be matched to their pre-test data. Thus, the final sample for analysis was 216, with 65, 65, and 86 participants in the CONTROL, CONTEXT, and COMBINED conditions, respectively. No differential attrition by condition was indicated (F(2, 235) = 2.12, p = .12).

On average, participants reported drinking 2.5 (*SD* = 3.17) drinks during the day of the football game they tailgated. Frequency distributions for self-reported alcohol use can be found in Table 1. Nearly half (43%) of the participants reported not drinking during the day or night of the football game, labeled 'abstainers.' Means and standard deviations for game day drinking among all students by gender and among drinkers by gender are presented in Tables 2 and 3, and means and standard deviations for perceptions of same-sex drinking are presented in Table 4. In line with previous research, students reported perceiving that their peers drank substantially more than was indicated by self-reports (Borsari & Carey, 2003). The typical student was perceived to consume twice as many drinks (*M* = 5.94, *SD* = 1.61; M_{male} = 7.57, *SD* = 1.87; M_{female} = 4.21, *SD* = 1.28) while tailgating.

The current sample differed from previous research in two respects. First, pre-test neutral, female-specific, and male-specific perceived norms were not significantly correlated with typical drinking or game day drinking (see Table 5). Second, no significant differences between male and female typical drinking were observed ($t(239) = -0.48$, $p = .63$). The male and female participants in the present study may have been more similar in their alcohol use patterns than is often observed because these female participants were sports fans, who, as we have established, tend to have higher levels of alcohol use.

Comparing self-reports of alcohol consumption at the game, however, females reported fewer drinks than males, (*M* = 2.29, *SD* = 3.10) and (*M* = 3.09, *SD* = 3.43), respectively, and these reports were determined to be marginally significantly different ($t(208) = -1.62$, $p = .07$). Given the importance of gender to the design of the COMBINED intervention, gender was included as a control variable in the analyses.

Males (M = 2.35, SD = 0.46) and females (M = 2.36, SD = 0.54) did not differ in reports of perceived credibility, $t(143) = 0.08$, $p = .94$. Participants' perceived credibility of the normative statistics did not significantly differ between the CONTEXT intervention (M = 2.41, SD = 0.56) and the COMBINED intervention (M = 2.31, SD = 0.48), $t(143) = 1.18$, $p = .24$, and no significant differences were indicated between the CONTEXT and the COMBINED condition for males ($t(31) = 0.51$, $p = .62$) or females ($t(143) = 1.58$, $p = .12$). As this scale has a maximum score of 5, indicating high perceived credibility, it appears the statistics were not considered very credible or believable by participants.

Inferential Results

The first model was estimated to determine whether intervention condition was a significant predictor of self-reported alcohol use while tailgating. Intervention condition was entered into the model as a predictor of alcohol use, controlling for pre-test typical drinking and gender, and the results are presented in Table 6. The results from the count model suggested that students in the CONTEXT condition did not report fewer drinks than individuals in the CONTROL condition, failing to support Hypothesis 1. Similarly, the logistic portion of the model suggested that assignment to the CONTEXT condition did not significantly predict the odds of drinking on the day of the football game, compared to the CONTROL group. In addition, participants in in the COMBINED condition were not determined to drink significantly fewer drinks than participants in the CONTROL condition, failing to support Hypothesis 2. Within the logistic portion of the model, the COMBINED condition was not suggested to be associated with the odds of drinking on the day of the game, compared to the CONTROL group. Although a significant direct effect on the behavioral outcome of game-day drinking was not obtained, the potential effect of the intervention on the mediating psychological process of perceived

prevalence of peer drinking was still of interest. Therefore, hypotheses 3 and 4 were tested, but hypothesis 5, which examined the full causal pathway, was not tested.

To assess Hypotheses 3 and 4, same-sex normative perceptions were also regressed on intervention condition with typical drinking and gender entered as control variables (see Table 7). The results suggested that assignment to the CONTEXT condition did not result in participants estimating that their peers consumed fewer drinks while tailgating than did participants assigned to the CONTROL group. However, participants in the COMBINED condition perceived that students of the same sex consumed 18% fewer drinks while tailgating than did participants in the CONTROL condition, and this effect was statistically significant (p = .02). These results provide partial support for the mediating psychological process of the intervention, namely, that it reduces overestimations of perceived peer alcohol use.

Moderation of gender

Next, the potential moderating role of gender on intervention effectiveness (Hypothesis 6) was assessed by entering the Gender X Condition interaction term into the model. The results for perceived same-sex alcohol use are presented in Table 8. Note that gender was coded as with females as the reference group. Gender was determined to be a significant predictor of perceived same-sex alcohol use, males estimating 48% greater alcohol consumption than females. Controlling for typical drinking, no significant differences in same-sex perceptions between the CONTEXT condition and the CONTROL condition were found for females. Females in the COMBINED intervention estimated that their same-sex peers drank 18% fewer drinks than did females in the CONTROL condition, an effect determined to be significant when controlling for typical drinking. The interaction terms indicated that gender did not significantly moderate the effects of the CONTEXT condition or the COMBINED condition on perceived same-sex alcohol

use. That is, the effect of the interventions for males was not significantly different from the pattern previously described for females.

Self-reported alcohol use was next regressed on the interaction of gender and condition (see Table 9). The results indicated that the interventions were not as effective for men, the gender interactions were not significant. Thus, the beneficial effects of the COMBINED intervention were not determined to be greater for females than males, as hypothesized.

Discussion

The purpose of the current investigation was to examine the effectiveness of alcohol interventions targeting a university football game. Specifically, the question of interest was whether the COMBINED intervention, an intervention using context- and gender-specific descriptive norms, would be more effective at reducing college students' alcohol consumption than the CONTEXT intervention, an intervention using gender-nonspecific and context-specific messages. Compared to the CONTROL group, assignment to the CONTEXT condition was not determined to significantly reduce drinking among students in the current study, contrary to hypotheses. Students who completed the COMBINED intervention reduced their drinking, compared to the CONTROL group, although the results were not statistically significant. In addition, the COMBINED condition appears to be more effective at reducing drinking among females than males. However, this effect was marginally significant. Unfortunately, the small number of males in the present investigation (25, 23, and 18 participants in the CONTROL, CONTEXT, and COMBINED conditions, respectively) is a serious limitation of this study. However, significant differences were observed in the mediating psychological process of perceived peer drinking such that perceptions significantly decreased following the intervention, but self-reported drinking did not. These findings are consistent with previous research suggesting it is easier to change normative perceptions than it is to change behavior (Clapp et al., 2003; DeJong et al., 2009).

Because this was the first social norm intervention to target tailgating drinking, there may be additional factors contributing to student drinking during these contexts, including norms associated with gender. Collegiate and professional football is a sport in which only males are

allowed to participate. Accordingly, males are more likely to not only watch, but celebrate and participate in activities related to football (e.g., pregaming and tailgating) (Nelson & Wechsler, 2003). For this reason, social norms regarding alcohol use while tailgating might be more established for males, whereas female alcohol use might be less established. In other words it may be easier for students to imagine a male drinking while tailgating than females. As individuals, both males and females, tend to conjure images of males when questioned about *typical* drinking behaviors (Lewis & Neighbors, 2004), it is likely that those effects are exaggerated when students are questioned about tailgating drinking. Imagining a male drinking while celebrating a football game may require less effort than imaging a female engaging in the same behaviors. If students are not confident in their perceptions of females' drinking while tailgating, presenting normative information may not have produced sufficient cognitive dissonance to elicit a desire to change behavior. However, such effects could not be examined in the present study due to larger number of female volunteers than male volunteers, a reflection of the psychology department's research pool gender distribution (i.e., predominately female).

According to theories of cognitive dissonance, people experience psychological distress when faced with inconsistencies in their behavior, attitudes, or beliefs (Harmon-Jones & Mills, 1999; Festinger, 1957). Stemming from self-perception theory, which predicts that individuals seek to hold attitudes that are aligned with their behaviors (Bem, 1967), cognitive dissonance theory is also based on consistency theories. Festinger (1957) asserted that knowledge of one's attitudes, beliefs, values, and behaviors that are discrepant motivates people to reduce the psychological distress associated with the inconsistencies. There are two different ways to reduce this distress: change one's beliefs or change one's behaviors. The simplest way to decrease dissonance, according to Festinger (1957), is to change the discrepant behavior. Thus, creating

dissonance by highlighting discrepancies in an individual's alcohol-related perceptions and behaviors while also drawing attention to behaviors that do not align with those perceptions, such as drinking while tailgating, may result in a more effective intervention. One method for increasing the cognitive dissonance experienced by participants during a social norm intervention is the use of personalized normative feedback.

One difference between successful gender-specific interventions and the intervention employed was that the current study used a traditional social norms approach, presenting descriptive norm information to participants, as opposed to the use of another commonly used social norms approach: personalized normative feedback. Gender-specific social norm interventions targeting tailgating drinking may require the use of personalized normative feedback as this approach has been found to be effective in previous investigations using gender-specific information (Lewis & Neighbors, 2007). Personalized normative feedback differs from a traditional social norm intervention in that individuals' misperceptions regarding others' alcohol use are highlighted to a greater extent. While social norm interventions inform students of what the actual drinking rates are among peers, personalized normative feedback includes this component and then calculates the percent difference between students' reported drinking rates and the actual drinking rates and presents those results to participants (Neighbors et al., 2004). The results are tailored to students' own drinking levels, and students receive immediate feedback about how much more or less they drink than their peers. This additional component may result in increased cognitive dissonance among participants, increasing the effectiveness of the intervention. Lewis and Neighbors (2007) launched the first gender-specific intervention that successfully reduced drinking among undergraduate students. Their investigation presented gender-specific discrepancies between students' reported behaviors and the normative behaviors

of their peers, subsequently reducing drinking. The current study did not use personalized normative feedback, which may have reduced the effectiveness of the intervention. Future researchers should test a gender-specific intervention targeting tailgating drinking using personalized normative feedback to determine whether this method can result in greater behavioral changes than a standard descriptive norm intervention.

Although the use of personalized normative feedback may result in greater levels of cognitive dissonance, and reduced rates of drinking, it may be fruitful to, instead, test gender-specific interventions in additional events and contexts that are more gender inclusive. Such events and contexts may include Spring Break, 21st birthdays, and holidays. Interventionists have studied and tested interventions during these contexts and events, but no known social norm intervention has utilized gender-specific feedback in such attempts. As previously discussed, the discrepancy between male drinking and female drinking is theoretically greater during these times. Therefore, the use of gender-specific descriptive norm information should be more effective at reducing females' drinking in contexts that are gender inclusive. Both males and females turn 21, celebrate Spring Break, and have breaks during holidays. Normative perceptions associated with drinking rates during these contexts may be equally established for both males and females.

On the other hand, it may be that a lack of confidence in one's estimates of females' drinking in contexts where male representation is more prominent may have contributed to the success of the current study, indicating that uncertainty about one's estimations is associated with individuals' being amenable to social norm perception changes. Students who are confident in their beliefs regarding how much people drink while tailgating may have little room for changing their perceptions. Research has demonstrated that Greek students are less likely to

change their behavior in response to a social norm intervention than typical students because they do not consider themselves to be part of the general population (Haines, 1997). Although they believe the information presented, they simply do not think it applies to them. A similar effect may have occurred during the present study. It may be the case that participants simply do not consider the data presented to be reflective of themselves or their own peer group. This may be demonstrative of how confidence in one's normative perceptions may reduce the effectiveness of these programs. When faced with discrepancies between normative perceptions and normative behaviors, individuals may be more inclined to search for ways to excuse or explain the discrepancy. Including measurements of participants' confidence ratings of their normative perceptions during pre-test assessments would allow researchers to explore this possible moderator of interventions' effectiveness.

Future research should test Lewis and Neighbors' (2004) findings suggesting individuals are more likely to imagine a male than a female when considering drinking norms in different contexts and events. Perhaps students are more likely to perceive a male drinking when considering tailgating, or any other male dominated drinking activity, than typical drinking behaviors. Such findings may indicate what contexts and events are best suited for gender-specific social norm interventions. Because a male-specific drinking norm will indicate higher drinking rates than a gender-neutral drinking norm, employing gender-specific interventions in contexts that are heavily male dominated may be less fruitful for males than females.

The present study provide preliminary evidence that gender-specific social norm interventions might reduce the number of drinks students consume while tailgating. Although promising, this study was conducted using first- and second-year undergraduate students, most of whom were enrolled in psychology courses. Future research should be conducted using a more

diverse sample, including older students, adults, and alumni. For the Fall of 2015, it is proposed that the current study be replicated using such a diverse sample. However, the low perceived credibility of the messages used in the present study is a concern that needs to be addressed before the messages are used again. Focus groups may be a useful tool for understanding how to improve the messages. The next study will utilize the normative data collected at the football game and adjust the data such that students will receive student-specific information and adults will receive information relevant to them. A larger sample size may allow for the detection of differences in alcohol-related consequences as a function of intervention condition as well as allow for greater examination of male's drinking behaviors. In addition, the inclusion of a no-treatment control, as opposed to a true control group, may have produced social desirability effects as participants may have expected their drinking to be scrutinized at follow-up.

As females are more likely to experience negative consequences of drinking (Sugarman et al., 2008), interventions that can be disseminated online to large numbers of students at little cost are vital. Because tailgating is commonly considered a male-dominated behavior and female drinking norms may not be established, future research should evaluate the effectiveness of gender-specific social norm interventions in additional contexts in which females have stronger social norms related to drinking.

Conclusions

Situations conducive to alcohol use are commonly associated with vacationing or attending parties to celebrate these events, and these planned engagements have been suggested to predict higher rates of substance use (Grekin et al., 2007). It is important to determine whether social norm interventions can successfully reduce alcohol use among college students in specific contexts in order to reduce the array of alcohol use and alcohol-related problems students

experience. If the addition of a gender-specific component can enhance the effectiveness of social norm interventions, these universal prevention programs can be distributed online, providing an effective, wide-reaching, and low-cost method of addressing college student alcohol use.

The predictions made by the social norms approach are theoretically grounded, building on classical paradigms to explain the mechanisms involved, and it is important to understand these mechanisms in order to employ a successful social norm program. Social norms theory proposes people consider their perceptions of others' behaviors when deciding whether or not to engage in a specific act (Perkins & Berkowitz, 1986) and this assumption is derived from conceptualizations of social learning theory, social comparison theory, and pluralistic ignorance. But recent criticisms of social norm interventions have challenged their use in university settings. Gender-specific components may represent missing mechanisms between perceived social norms and alcohol use behaviors. Social norm interventions may only be effective when individuals experience a gender-specific intervention. A web-based, gender-specific social norm intervention may effectively decrease alcohol use among female college students, possibly increasing their success in academics and decreasing their risk of alcohol-related problems.

		Drinking Quantity Message	Heavy Episodic Drinking Message
Context	All	The average student at CSU drinks **3.1 drinks** while tailgating CSU football games	**66.1%** of students drink **4 or less** drinks while tailgating CSU football games
Combined	Males	The average male student at CSU drinks **3.6 drinks** while tailgating CSU football games	**53.3%** of male students at CSU drink **4 or less drinks** while tailgating CSU football games
	Females	The average female student at CSU drinks **2.4 drinks** while tailgating CSU football games	**71.4%** of female students at CSU drink **3 or less drinks** while tailgating CSU football games

Figure 1. Descriptive norm messages presented all, male, and female participants assigned to each condition.

Table 1

Frequency Distributions for Game Day Alcohol Consumption by Gender

	All Students		Males		Females	
Number of Drinks	*N*	%	*N*	%	*N*	%
0	96	44.2%	24	41.4%	70	46.1%
1	14	6.5%	3	5.2%	11	7.2%
2	19	8.8%	3	5.2%	15	9.9%
3	15	6.9%	5	8.6%	8	5.3%
4	24	11.1%	6	10.3%	16	1.0%
5	12	5.5%	3	5.2%	9	5.9%
6 to 7	19	8.7%	8	5.2%	16	10.5%
8 to 9	12	5.5%	7	12.0%	5	3.3%
10	5	2.3%	4	6.9%	1	0.7%
More than 10	1	0.5%	0	0%	1	0.7%

Table 2

Game Day Drinking Rates and Proportions of Abstainers in each Experimental Condition

	CONTROL	CONTEXT	COMBINED
	M (*SD*)	*M* (*SD*)	*M* (*SD*)
All	2.34(3.91)	2.64(3.04)	2.58(2.73)
Females	2.33(4.41)	2.32(2.82)	2.31(2.49)
Males	2.36(3.53)	3.42(3.47)	3.63(3.38)
	%	%	%
Abstainers	40.6%	47.8%	55.8%

Table 3

Drinkers' Game Day Drinking Rates in each Experimental Condition

	M (*SD*)	*M* (*SD*)	*M* (*SD*)
All	5.27(4.69)	4.66(2.55)	4.20(2.38)
Females	5.12(5.28)	4.32(2.38)	3.86(2.11)
Males	5.56(3.58)	5.40(2.88)	5.56(3.01)

Table 4

Perceptions of Same-sex Tailgating Drinking

	CONTROL	CONTEXT	COMBINED
	M (*SD*)	*M* (*SD*)	*M* (*SD*)
Females	3.5(1.37)	3.26(0.93)	2.94(1.11)
Males	5.55(2.06)	4.45(1.67)	4.35(1.22)

Table 5

Means, Standard Deviations, and Correlations for Gender, Typical Drinking, Perceptions, and Drinks

			Correlations				
Variable	*M*	*SD*	1	2	3	4	5
1. Gender	-	-	-				
2. Typical Drinking	2.57	0.86	.34	-			
3. Gender-neutral Perceptions	4.07	1.49	.11	.02	-		
4. Female-specific Perceptions	3.26	1.23	.09	.07	.83**	-	
4. Male-specific Perceptions	4.84	1.71	.04	.09	.84**	.82**	-
5. Total Drinks	2.5	3.17	.11	.49**	.04	.11	.05

Note. *N* s ranged from 217 to 242 due to missing data. . **p < .001.

Table 6

Zero-inflated Poisson Regression Coefficients and Confidence Intervals for Game Day Drinking

	Count Model					Zero-Inflated Model				
				95% CI					95% CI	
	β	*Se* (*β*)	*z*	Lower	Upper	*β*	*Se* (*β*)	*z*	Lower	Upper
Intercept	0.46Ł	0.26	1.78	-0.05	0.98	4.35***	0.78	5.56	2.81	5.88
Gender	0.14	0.10	1.45	-0.05	0.33	-0.21	0.40	-0.53	-1.00	0.57
Typical Drinking	0.36***	0.08	4.41	0.20	0.52	-1.67***	0.27	-6.25	-2.19	-1.14
CONTEXT	-0.15	0.12	-1.27	-0.37	0.08	-0.15	0.44	-0.35	-1.01	0.71
COMBINED	-0.14	0.11	-1.22	-0.36	0.08	-0.78	0.47	-1.65	-1.54	0.14

Note. CI = Confidence Interval. Ł$p < .10$. *$p < .05$. **$p < .01$. ***$p < .001$.

Table 7

Negative Binomial Regression Coefficients and Confidence Intervals for Perceived Peers' Tailgating Drinking

				95% CI	
	β	***Se (β)***	***z***	**Lower**	**Upper**
Intercept	1.25***	0.12	10.24	1.01	1.49
Gender	0.39***	0.07	5.23	0.24	0.54
Typical Drinking	0.01	0.04	0.31	-0.07	0.09
CONTEXT	-0.13	0.08	-1.51	-0.31	0.04
COMBINED	-0.20*	0.09	-2.37	-0.37	-0.04

Note. CI = Confidence Interval. Ł$p < .10$. *$p < .05$. **$p < .01$. ***$p < .001$.

Table 8

Negative Binomial Regression Coefficients and Confidence Intervals for Interaction of Condition and Gender on Perceived Peers' Tailgating Drinking

				95% CI	
	b	***Se* (*b*)**	***z***	**Lower**	**Upper**
Gender	0.46***	0.12	3.76	0.22	0.70
Typical Drinking	0.01	0.04	0.27	-0.07	0.09
CONTEXT	-0.07	0.12	-0.64	-0.30	0.15
COMBINED	-0.18	0.11	-1.64	-0.39	0.04
CONTEXT*Gender	-0.15	0.18	-0.84	-0.50	0.21
COMBINED*Gender	-0.06	0.18	-0.35	-0.43	0.29

Note. CI = Confidence Interval. Ł$p < .10$. *$p < .05$. **$p < .01$. ***$p < .001$.

Table 9

Zero-inflated Poisson Regression Coefficients and Confidence Intervals for Interaction of Condition and Gender on Alcohol Use

	Count Model					Zero-Inflated Model				
				95% CI					95% CI	
	b	*Se* (*b*)	*z*	Lower	Upper	*b*	*Se* (*b*)	*z*	Lower	Upper
Intercept	0.51Ł	0.26	1.93	-0.01	1.02	4.24***	0.80	5.34	2.68	5.79
Gender	-0.08	0.18	-0.44	-0.43	0.27	0.31	0.66	0.47	-0.98	1.61
Typical Drinking	0.37***	0.08	4.50	0.21	0.53	-1.69***	0.27	-6.23	-2.22	-1.16
CONTEXT	-0.24Ł	0.15	-1.70	-0.53	0.04	0.07	0.53	0.13	-0.96	1.1
COMBINED	-0.26Ł	0.14	-1.89	-0.53	0.01	-0.47	0.50	-0.94	-1.44	0.51
CONTEXT*Gender	0.26	0.24	1.10	-0.21	0.73	-0.73	0.97	-0.75	-2.63	1.18
COMBINED*Gender	0.36	0.24	1.51	-0.11	0.83	-0.97	1.02	-0.95	-2.96	1.02

Note. CI = Confidence Interval. Ł$p < .10$. *$p < .05$. **$p < .01$. ***$p < .001$.

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