

MISPERCEPTION OF ALCOHOL NORMS: INFLUENCE OF OTHERS' COMMENTS ON
PERCEPTION OF NORM DRINKING BEHAVIORS

by

CHELSEA A. SCHNABELRAUCH

B.A., Calvin College, 2011

A THESIS

submitted in partial fulfillment of the requirements for the degree

MASTER OF SCIENCE

Department of Psychological Sciences
College of Arts and Sciences

KANSAS STATE UNIVERSITY
Manhattan, Kansas

2013

Approved by:

Major Professor
Dr. Laura A. Brannon

Abstract

Previous research has repeatedly demonstrated that undergraduate students overrate others' norm comfort with and consumption of alcohol (i.e., Prentice & Miller, 1993). This is a dangerous misperception, as students are increasing their personal alcohol intake and / or frequency in order to match their incorrect perception of how much everyone else is drinking. Already assuming that their peers are more comfortable with, and consume more, alcohol than they do, college students' perception of norm alcohol use may be influenced by peer comments indicating approval / disapproval of alcohol use. Thus, the present study experimentally tested whether a positive or negative comment in reaction to a portrayal of excessive drinking would influence participants' perceptions of drinking behavior among their campus peers, and whether the sex of the person making the comment differentially influences participants' perceptions of each sex's extent of participation in drinking. Participants' perceptions of drinking behavior were not influenced by the confederate comment nor confederate sex; however, participants consistently estimated that the drinking norm is higher for males than females. Additionally, female participants perceived the drinking norm to be higher than did male participants. Participants' ratings of the confederates did differ, however, depending on the comment; participants rated the confederates more favorably when the comment made was negative / criticizing of excessive drinking than when the comment made was positive / endorsing of excessive drinking.

Table of Contents

List of Tables	vi
Acknowledgements	ix
CHAPTER 1 – Introduction	1
Overview	1
Alcohol Consumption	2
Prevalence and Consequences	2
College Students	3
Influences on College Drinking	4
Misperception of Drinking Norms	5
Prentice and Miller (1993)	6
Prevention / Intervention Techniques	8
Social Norms Approach	8
Social Influence on Perceptions	10
Majority Influence	10
Norm Formation	11
Social Influence on Perceptions of Attractiveness	12
The Present Study	13
CHAPTER 2 – Method	15
Participants	15
Materials and Procedure	15
Pictures	16
Picture Ratings	17
Confederate Comment	19
Suspicion	19
Confederate Rating	19
Debriefing	20
Confederate Pretest	20
Method	20
Participants	20

Procedure	20
Results	21
CHAPTER 3 – Results	21
Descriptive Statistics	23
Drinking Norm Perceptions	23
Drinking Norm Perceptions	23
How Common	24
How Often	24
How Many Hours	25
How Many Drinks	26
How Much Enjoy	26
General Norm Drinking Behavior	27
Drinking Norm Perceptions Summary	28
Confederate Ratings	29
Comment Appropriateness	29
Likeableness	30
Bad / Good Impression	30
Weak / Strong Person	31
Bad / Good Person	31
General Confederate Rating	32
Confederate Ratings Summary	33
CHAPTER 4 – Discussion	34
Influence of Confederate Comment	34
Confederate Ratings	36
Misperception of Alcohol Norms	40
Participant Sex and Sex Norm Perception Differences	41
Limitations	43
Comment Strength	43
Confederate Unfamiliarity	44
Participants' Own Drinking	44
Future Research	45

Implications and Contributions	47
References	50
Appendix A - Pictures	55
Appendix B - Picture Ratings	56
Practice Picture - Going for a Walk	56
Practice Picture - Skiing	58
Picture 1 - Bowling	60
Picture 2 - Attending Concerts	62
Picture 4 - Taking Dance Classes	64
Picture 5 - Giving a Presentation	66
Picture 6 - Knitting	68
Picture 7 - Travelling by Plane	70
Appendix C - Drinking Alcohol Picture Ratings	72
Picture 3 - Drinking Alcohol	72
Appendix D - Emotion Ratings	74
Appendix E - Suspicion	75
Appendix F - Confederate Ratings	76
Appendix G - Pretest Pictures	77
Male Confederate Picture	77
Female Confederate Picture	77
Appendix H - Pretest Confederate Ratings	78

List of Tables

Table 1 Means and standard deviations for the Participant sex x Confederate sex x Confederate comment Factorial Analysis of Variance on how common is drinking alcohol	79
Table 2 Participant sex (P sex) x Confederate sex (C sex) x Confederate comment (Comment) Factorial Analysis of Variance on how common is drinking alcohol	81
Table 3 Means and standard deviations for the Participant sex x Confederate sex x Confederate comment x Sex norm perception repeated-measures Analysis of Variance on how often the average student drinks alcohol	82
Table 4 Participant sex (P sex) x Confederate sex (C sex) x Confederate comment (Comment) x Sex norm perception (Sex norm) repeated-measures Analysis of Variance on how often the average student drinks alcohol	86
Table 5 Means and standard deviations for the Participant sex x Confederate sex x Confederate comment x Sex norm perception repeated-measures Analysis of Variance on how many hours the average student drinks alcohol	88
Table 6 Participant sex (P sex) x Confederate sex (C sex) x Confederate comment (Comment) x Sex norm perception (Sex norm) repeated-measures Analysis of Variance on how many hours the average student drinks alcohol	92
Table 7 Means and standard deviations for the Participant sex x Confederate sex x Confederate comment x Sex norm perception repeated-measures Analysis of Variance on how many drinks the average student drinks	94
Table 8 Participant sex (P sex) x Confederate sex (C sex) x Confederate comment (Comment) x Sex norm perception (Sex norm) repeated-measures Analysis of Variance on how many drinks the average student drinks	98
Table 9 Means and standard deviations for the Participant sex x Confederate sex x Confederate comment x Sex norm perception repeated-measures Analysis of Variance on how much the average student enjoys drinking alcohol	100
Table 10 Participant sex (P sex) x Confederate sex (C sex) x Confederate comment (Comment) x Sex norm perception (Sex norm) repeated-measures Analysis of Variance on how much the average student enjoys drinking alcohol	104

Table 11 Means and standard deviations for the Participant sex x Confederate sex x Confederate comment x Sex norm perception repeated-measures Analysis of Variance on general norm drinking behavior	106
Table 12 Participant sex (P sex) x Confederate sex (C sex) x Confederate comment (Comment) x Sex norm perception (Sex norm) repeated-measures Analysis of Variance on general norm drinking behavior	110
Table 13 Means and standard deviations for the Participant sex x Confederate sex x Confederate comment Factorial Analysis of Variance on confederate comment appropriateness	113
Table 14 Participant sex (P sex) x Confederate sex (C sex) x Confederate comment (Comment) Factorial Analysis of Variance on confederate comment appropriateness	115
Table 15 Means and standard deviations for the Participant sex x Confederate sex x Confederate comment Factorial Analysis of Variance on confederate likeableness	116
Table 16 Participant sex (P sex) x Confederate sex (C sex) x Confederate comment (Comment) Factorial Analysis of Variance on confederate likeableness	118
Table 17 Means and standard deviations for the Participant sex x Confederate sex x Confederate comment Factorial Analysis of Variance on bad / good impression of confederate	119
Table 18 Participant sex (P sex) x Confederate sex (C sex) x Confederate comment (Comment) Factorial Analysis of Variance on bad / good impression of confederate	121
Table 19 Means and standard deviations for the Participant sex x Confederate sex x Confederate comment Factorial Analysis of Variance on impression of confederate as a weak / strong person	122
Table 20 Participant sex (P sex) x Confederate sex (C sex) x Confederate comment (Comment) Factorial Analysis of Variance on impression of confederate as a weak / strong person ..	124
Table 21 Means and standard deviations for the Participant sex x Confederate sex x Confederate comment Factorial Analysis of Variance on impression of confederate as a bad / good person	125
Table 22 Participant sex (P sex) x Confederate sex (C sex) x Confederate comment (Comment) Factorial Analysis of Variance on impression of confederate as a bad / good person	127
Table 23 Means and standard deviations for the Participant sex x Confederate sex x Confederate comment Factorial Analysis of Variance on general confederate rating	128

Table 24 Participant sex (P sex) x Confederate sex (C sex) x Confederate comment (Comment)	
Factorial Analysis of Variance on general confederate rating	130

Acknowledgements

I would like to thank my advisor, Dr. Laura Brannon, for her guidance and contribution to the present study, as well as the other members of my supervisory committee, Dr. Clive Fullagar and Dr. Richard Harris, for their feedback and suggestions. I would also like to thank my undergraduate research assistant, Austin Ponton, for his assistance with conducting the experiment. And finally, I would like to thank my family and all of my friends who continue to provide encouragement and support throughout my educational endeavors.

CHAPTER 1 - Introduction

Overview

The current study was designed to examine the influence of confederate comments either endorsing or criticizing excessive drinking behaviors on undergraduate college students' perceptions of how common drinking behavior is on their campus. First, the prevalence of drinking in the U.S. is presented along with consequences to excess alcohol consumption. The prevalence of young adults', and specifically college students', high rates of drinking are also presented, and reasons for the increase in college drinking are discussed. Drinking norm perception research is reviewed, focusing particularly on Prentice and Miller (1993). Proposed and utilized prevention techniques are presented, focusing on the social norms approach based on social norm perception literature. Notable social influence studies are reviewed including majority influence and norm formation, and the methodology, results, and implications of Kenrick and Gutierrez' (1980) study revealing effects of verbalized comments on perception are described.

Given the influence of comments on perceptions of attractiveness in Kenrick and Gutierrez' (1980) study, the present study sought to examine the influence of a positive / endorsing or negative / criticizing comment regarding excessive drinking made by either a male or female confederate on male and female participants' estimates of: how common drinking is on campus, how often the average male / female (rated separately) student drinks alcohol, how many hours the average male / female (rated separately) student drinks alcohol at one time, how many drinks the average male / female (rated separately) student consumes at one time, and how much the average male / female (rated separately) student enjoys drinking alcohol. It was hypothesized that positive / endorsing comments would increase participants' estimates of

drinking behavior and negative / criticizing comments would decrease estimates, and that comments made by a female confederate would influence participants' perception of the female drinking norm and male comments would influence the perception of the male norm. Finally, the methodology, data analytic results, and a discussion of the present study's results are presented.

Alcohol Consumption

Prevalence and Consequences

Binge drinking, which is commonly defined as drinking alcohol in excess (consuming 5 or more drinks for males and 4 or more drinks for females within a 2-hour span; National Institute of Alcohol Abuse and Alcoholism, 2004), is one of the leading preventable causes of death in the United States (U.S. Department of Health and Human Services, 2010) and has largely been a concern due to its many risks and consequences affecting individuals and society. Such consequences include individual consequences such as: risk taking behaviors, unintentional (i.e., car accidents, falls, drowning, burns) and intentional (i.e., suicide) injuries, sexually transmitted diseases, liver disease, heart disease, and alcohol poisoning; and social and economic consequences such as: physical (i.e., domestic violence, child abuse, homicide) and sexual (i.e., rape) assault, car accidents, and lost productivity (Centers for Disease Control and Prevention, 2012; Naimi et al., 2003). Binge drinkers are more likely to suffer from one or more of these consequences than someone who does not drink excessively (Wechsler, Lee, Kuo, & Lee, 2000). Though some of these consequences may arise from long-term alcohol abuse (i.e., liver disease, cardiovascular diseases; Centers for Disease Control and Prevention, 2012), most of the consequences from binge drinking are immediate and severe (Chen, Dufour, & Yi, 2004; Hingson, Heeren, Winter, & Wechsler, 2005). For example, approximately one-third of all automobile accident fatalities involve alcohol (Toroyan & Peden, 2007), and binge drinking is

strongly associated with intoxicated driving (Flowers et al., 2008) with binge drinkers being approximately 14 times more likely to drive intoxicated (Naimi et al., 2003). Young adults are particularly affected by this, as car accidents are the leading cause of death for young adults (18-25-year-olds) in America (World Health Organization, 2011). It was estimated in 1998 and 2001 that over 1,400 young adults sustained fatal alcohol-related injuries, including those caused by automobile accidents (Hingson et al., 2005). Not only are young adults the *victims* of alcohol-related motor accidents, they are largely the *cause*; more than 2 million young adults in 1998 drove intoxicated (Hingson et al., 2005). Furthermore, due to alcohol intoxication, hundreds of thousands of young adults sustain unintentional injuries, experience physical aggression and assault, or are victim to date rape, annually (Hingson et al., 2005).

College Students

Though the young adult population as a whole has high rates of drinking and the highest proportion of binge drinking (Chen, Dufour, & Yi, 2004; Hingson et al., 2005; Naimi et al., 2003), specifically college students show significantly higher percentages of binge drinking than do their non-college counterparts (Hingson et al., 2005; Hingson, Zha, & Weitzman, 2009; Slutske, 2005). In one particular study, data from the Missouri Adolescent Female Twin Study showed that a college-attending twin was more likely than her non-college attending twin to binge drink (Slutske et al., 2004). College students have likewise been found to be more likely to drive intoxicated than non-college 18-25-year-olds (Hingson et al., 2005). In 2001, over 65 percent of college students used alcohol at least once in the past month (Johnston, O'Malley, & Bachman, 2001), and approximately 40 percent reported binge drinking in the past two weeks (Wechsler & Nelson, 2001). Because binge drinking is so commonly associated with college, the

term “binge” has even been proposed to be used exclusively to describe heavy episodic drinking by college students (Wechsler & Nelson, 2001).

This of course raises the question why college-attending young adults are more likely than non-college 18-25-year-olds to engage in, and consequently suffer the consequences from, binge drinking behavior. Why has binge drinking been identified as “the single most serious public health problem confronting American *colleges* [emphasis added]” (Wechsler, Dowdall, Maenner, Gledhill-Hoyt, & Lee, 1998, p. 57)?

Influences on College Drinking

As college students leave home, they gain new freedom and independence as parental control and influence decrease (Arnett, 2005; White & Jackson, 2005). Lacking the friend structure they left back home, new college students begin the search to fit in, belong, and build new social support frameworks and friend groups (Arnett, 2005; Borsari & Carey, 2001; White & Jackson, 2005). These students in particular are socially fragile; their susceptibility to peers’ influence is magnified as they attempt to prove themselves worthy to potential friends. As they seek to mold their own identity and reputation, they take advice from others and reference others’ behaviors to determine what acceptable college behavior is.

Alcohol use is tightly bound with the college identity (Borsari & Carey, 2001; Schroeder & Prentice, 1998). Binge drinking is commonly associated with college (White & Jackson, 2005), particularly in the media, and college drinking is to a certain extent encouraged in the American culture (Arnett, 2005) and in the college environment (White & Jackson, 2005). For many, entering college marks the initial, or increased, exposure to alcohol (Borsari & Carey, 2001; White, Labouvie, & Papadaratsakis, 2005). Borsari and Carey (2001) indicate three (one direct and two indirect) peer influences on college students’ drinking behaviors. For some, the

pressure to drink may be a result of direct peer pressure. Persistently being offered drinks and being questioned about non-drinking behavior may be enough to pressure new students into drinking alcohol. This coupled with the fear of being teased or excluded for refraining to drink are forms of direct peer pressure facing the new college student who is eager to fit in and belong (Arnett, 2005; Borsari & Carey, 2001). For others, the peer influence to drink may be indirect in the form of modeling. New students are continuously witnessing alcohol consumption at social events, and this repeated exposure to alcohol and seeing peers who may be desirable as friends using alcohol (possibly in excess) can serve as models to imitate. The potential presence of older students as well may trigger modeling tendencies, as freshmen students observe their older peers partaking in excessive drinking behavior (Borsari & Carey, 2001). Another form of indirect peer influence on college students' drinking behaviors is perceived norms. Students use social referencing to infer and validate appropriate college behavior and construct a norm. This perceived social norm in turn gives the perception of alcohol as a social norm and thus creates pressure on an individual to conform to that norm (Baer, 1994; DeJong & Linkenbach, 1999). This is intuitively problematic because new students hold the perception that everyone drinks in college, but it is also problematic because due to the repeated witnessing of peers' alcohol use, individuals form a *misperception* of the drinking norm, believing themselves to be consuming *less* alcohol and approving *less* of alcohol use than their average peer (Borsari & Carey, 2003; Prentice & Miller, 1993).

Misperception of Drinking Norms

The idea that individuals tend to overestimate others' alcohol consumption and comfort with alcohol use in comparison to their own is not new to research (see Baer, 1994; Borsari & Carey, 2003; Prentice & Miller, 1993). This phenomenological widespread misperception of

others' beliefs and behaviors is commonly referred to as *pluralistic ignorance* – a term first used by Floyd Allport in the 1920s (Centola, Willer, & Macy, 2005; Shamir & Shamir, 1997). The phenomenon of pluralistic ignorance has been researched regarding a number of different topics, including, perhaps most notably, the perception of norm drinking behavior. As social norms are the observable behaviors of people, individuals construct norms based on what they observe others doing. However, people are not always accurate in their perception of these norms (Prentice & Miller, 1993). Pluralistic ignorance (in regard to drinking misperceptions) is when an individual, after being repeatedly exposed to peers' alcohol use, forms a misperception (specifically an overestimate) of the norm drinking behavior and incorrectly assumes others' endorsement of that norm, while feeling that their own attitude toward the norm is more conservative (Prentice & Miller, 1993; Schroeder & Prentice, 1998; Shamir & Shamir, 1997). In other words, individuals are unaware that others' alcohol attitudes do not necessarily endorse what the individual thinks is the behavior of the majority (Schroeder & Prentice, 1998). This misperception is then perpetuated as less comfortable drinkers (the majority) refrain from voicing their attitudes toward the norm, and heavier drinkers (the minority) are led to believe that everyone else condones their level of drinking and thus continues in their behavior, which perpetuates the misperception of the actual majority norm (Shamir & Shamir, 1997). One of the more well-known studies on college students' alcohol norm misperceptions was published in 1993 by Deborah Prentice and Dale Miller and is of specific relevance to the present study.

Prentice and Miller (1993)

Prentice and Miller conducted a series of studies to examine the relationship between Princeton college students' consumption of and attitudes toward alcohol and their perceptions of peer consumption of and attitudes toward alcohol. In their first study, they asked 132

undergraduate students to rate how comfortable they felt with the drinking habits on their campus and how comfortable they thought the average undergraduate student felt with the drinking habits on campus. Their results revealed that though students varied in their own comfort with the alcohol use on campus, they were significantly less comfortable than they believed the average undergraduate student to be. Prentice and Miller then conducted a second study to ensure that asking students to rate the “average student’s” comfort with alcohol was not too abstract, and to also ensure that the presentation order of the self-comfort and norm-comfort questions were not responsible for the effect found in Study 1. In order to do this, they asked 242 undergraduates to rate their own comfort, their friends’ comfort, and the average undergraduate’s comfort with the campus’ drinking habits (questions were presented in varying order). Similar to their first study’s results, Prentice and Miller found that participants rated their personal comfort as significantly less than how comfortable they thought the average undergraduate student *and* their friends were. To determine how students deal with pluralistic ignorance, Prentice and Miller conducted a third study surveying 50 college sophomores once at the beginning of the academic year, and again eight weeks later. In addition to asking personal and norm comfort of campus drinking habits, they also asked participants how many drinks they consumed in the last week and during a typical week in the semester. Eight weeks later, they asked the students the same questions again. Astoundingly, they found that students showed more comfort with and greater alcohol intake on the second survey, which presumably was a result of shifting their attitudes regarding alcohol use toward their perceived drinking norm.

Though not the first study to look at alcohol norm misperceptions (i.e., Berkowitz & Perkins, 1986; see Perkins, Haines, & Rice, 2005 for a review of the literature), Prentice and Miller’s studies demonstrated the danger of alcohol norm misperceptions as students are

increasing their alcohol intake and / or frequency in order to match their incorrect perception of how much everyone else is drinking. As similar findings have been duplicated at colleges across the United States (see Berkowitz, 2005 and Perkins, 2003 for reviews of this literature), efforts to change drinking norm perceptions in order to decrease drinking behavior has become increasingly of interest.

Prevention / Intervention Techniques

With the dangerous level of excessive drinking occurring on college campuses, people have of course been actively attempting to prevent and reduce drinking rates among college students. A wide variety of techniques have been attempted; some with disappointing results and others with varying accounts of success. Some of these approaches include: individual counseling; environmental interventions (establishing public and institutional policies) such as increasing the legal drinking age, implementing zero tolerance laws for underage individuals, increasing the price of alcohol, lowering the blood alcohol content tolerance levels for underage individuals, inflicting higher penalties for use of false identification and purchasing for underage individuals, requiring keg registration, and restricting happy hours; and community interventions such as implementing school-based programs, actively reducing alcohol availability to youth, marketing ad campaigns, and heightening enforcement laws (Hingson et al., 2005; Perkins, 2003; Wagenaar, Toomey, & Lenk, 2004).

Social Norms Approach

One specific college drinking reduction technique that emerged following social norm misperception research gained particular popularity: the social norms approach. Originally introduced (though with different names) by Alan Berkowitz and H. Wesley Perkins in the 1980s (Berkowitz, 2005; Berkowitz & Perkins, 1986), the approach was first implemented by Michael

Haines in 1989 at a university (Haines, 1996; Haines & Spear, 1996). Some studies utilizing this approach show support for the technique as an effective means of reducing drinking rates (i.e., DeJong & Linkenbach, 1999; Haines & Spear, 1996; Perkins & Craig, 2006; Schroeder & Prentice, 1998), while other studies find the approach to be disappointingly ineffective (i.e., Thombs et al., 2004; Werch et al., 2000). Regardless of its effectiveness, however, the social norms approach (also known as social norms marketing) has continued to be utilized and implemented by a number of colleges and universities (Berkowitz, 2005).

As misperceptions of the alcohol norm have been shown to result in individuals increasing their drinking habits to match their incorrect perception of the norm, the social norms approach attempts to decrease the impact of attitude and drinking misperceptions by exposing the misperception and revealing true drinking norms (Berkowitz, 2005; Haines & Spear, 1996; Perkins, Haines, & Rice, 2005). The idea is that the correction of the misperceived norm will hinder students from increasing their drinking to match the norm, as they will come to realize the norm is closer to their own beliefs and behaviors than they originally believed (Berkowitz, 2005). If individuals believe that they are drinking less than the majority, they are unlikely to reduce their own drinking habits, because they see themselves as below the average (Borsari & Carey, 2003). However, if actual norms are exposed and individuals realize they are actually drinking the same, or more, than the majority, those individuals would be likely to reevaluate and reduce their drinking habits (Berkowitz, 2005; Borsari & Carey, 2003). This is reminiscent of the cognitive dissonance theory: as people initially increase their drinking habits to match their perception of how much everyone else is drinking, exposing the actual drinking norm will cause individuals to experience dissonance between their actions (increased drinking habits) and their

newly adjusted perceived norm, resulting in a reduction of their drinking habits in order to reduce the dissonance (Berkowitz, 2005).

Social Influence on Perceptions

Social influence, a popular topic in Social Psychology, explores how one's attitudes, cognitions, and / or behaviors are changed because of something another person (or group) does or says. As previously described, Prentice and Miller's (1993) study demonstrated how students' *perceptions* of norm drinking behavior was enough to influence students to increase their personal drinking amount and / or frequency over time. The idea that "everyone is doing it" is incredibly powerful and has been shown repeatedly in research to be a major force on an individual's behavior. Specifically, the work done by Solomon Asch must be acknowledged.

Majority Influence

Solomon Asch is incredibly well known in Psychology for his series of studies on the effect of group pressures on individuals' judgments (i.e., Asch, 1955; 1956). By creating disagreement between an individual and a unanimous majority, Asch explored the conditions under which a person would either act independently of the majority or conform. In his studies, participants, along with seven to nine confederates posing as participants, were instructed to select one of three lines varying in length that matched another displayed line. As the three choice lines were all easily distinguishable in comparison lengths, the correct line was obvious; however, sporadically throughout the trials, the confederates unanimously gave an incorrect answer. Despite the fact that the unanimous response was in conflict with participants' own visual information, the majority of participants conformed and gave the incorrect response. Though some individuals did not waver in their correct responses, others showed the complete opposite trend by conforming in almost every trial (Asch, 1955; 1956).

Asch tested variations of this study to explore the effects of group size and unanimity on conforming behavior (Asch, 1955). He found that when the opposing majority consisted of as few as three people, participants showed significant conforming behavior. Additionally, Asch found that if even just one other person gave a response (correct or incorrect) in opposition to the majority, participants' conformity to the majority drastically decreased.

It is not always the case that the majority of a group always holds the most influence. Several studies have demonstrated that there are times when the minority, even an individual, can sway a group's decision, attitude, or behavior (see Maas & Clark, 1984 for a review of the literature). Minority influence is particularly effective when the minority remains consistent and unwavering in its stance. An example from popular literature is *Twelve Angry Men*. Written by Reginald Rose, the play describes a jury comprised of 12 men deliberating the sentence of a homicide trial. Initially, all but one of the jurors unanimously agree that the defendant is guilty, but gradually, due to the disagreeing juror's persistent and confident insistence of innocence, the rest of the jurors are persuaded.

Norm Formation

Similar to Asch's (1955, 1956) studies on majority influence on conformity, Muzafer Sherif (1935) conducted a study to determine others' influence on an individual's response. However, unlike Asch's studies, the stimulus was ambiguous, and there was no deception of a majority deliberately giving incorrect responses. Placed in a dark room, participants were instructed to watch a projected stationary point of light. Lacking any reference points in the completely dark room, participants experienced the auto kinetic effect: the single, stationary point of light appeared to move. When participants individually observed the light, their reported estimates of how much the light had moved varied randomly with no seeming consensus across

participants. However, when the same participants viewed the light in groups and verbally gave their estimation of how far the light moved, participants' individual estimates converged over a number of trials and became closer to the average of the group members' original estimates.

Sherif's (1935) study demonstrated that one's *perception* can be influenced by information from others, particularly in an ambiguous environment. New to college and attempting to construct a social norm template, incoming college students' perceptions are influenced by others' stories and comments. Given that people are continuously exposed to others' comments and opinions on a number of topics and in various situations, it is expected that a person's perceptions are influenced by things they hear others say.

Social Influence on Perceptions of Attractiveness

In 1980, Douglas Kenrick and Sara Gutierres conducted a study to examine the influence of others' comments on an individual's perception. Though they studied verbal influence on perceptions of *attractiveness*, which is quite different than perceptions of norm drinking behavior, the methodology utilized in Douglas Kenrick and Sara Gutierres' (1980) Study 3 is of particular interest to the present study. Thus, it is crucial to the development of the current study to devote time and space explaining the procedure and findings in detail.

In 1980, researchers Kenrick and Gutierres conducted a series of studies to look at contrast effects on attractiveness judgments. Their third study addresses the direct influence of confederate comments on attractiveness ratings. To test this, male subjects were shown pictures of female faces under the pretense that the study was pretesting stimuli and wanted to use the stimuli in a subsequent study to see how adequately people can judge a person's personality from just a face. Believing that these judgments can be influenced by seemingly irrelevant variables, participants accepted that rating each faces' attractiveness before beginning the study was not

suspicious. Participants then rated six female faces shown one at a time and rated each picture on a scale of attractiveness. Three of the six faces had been previously rated in pretests as being average in attractiveness. In the experimental groups, two male confederates sat in the back row and made either positive (e.g., “You can set me up with her”) or negative (e.g., “What a dog”) comments or nonverbal utterances on two of the “average” attractiveness faces (either both the pictures received negative comments / nonverbals or both the pictures received positive comments / nonverbals for each condition). After the second picture was commented on, the experimenter asked participants to refrain from any response to the pictures. In the control condition, no confederates were present, and the experimenter requested at the beginning of the study that participants refrain from giving any verbal responses to the pictures.

Kenrick and Gutierrez found that confederates’ comments significantly affected participants’ attractiveness ratings of the “average” faces in the direction of the comments. When the confederates made negative comments or nonverbal sounds of disapproval in response to the picture, participants rated the face as less attractive than did the control group. Conversely, positive comments or nonverbal sounds of approval made toward the female face raised attractiveness ratings of the face in comparison to the control group.

The Present Study

Numerous studies have demonstrated the problematic misperception of alcohol use on college campuses (i.e., Prentice & Miller, 1993). Drinking rates are already at a concerning level for the young adult, specifically college, population, and the widespread misperception of the drinking norm seems at least partially to blame, as students are increasing their alcohol intake and / or frequency to match their incorrectly perceived norm (Prentice & Miller, 1993). Thus, understanding why the norm misperception occurs, how it is constructed, and what factors

influence the perception of the norm is crucial to effectively correct the misperception and consequently lower drinking rates.

It is clear that witnessing others' alcohol use contributes to misperceptions of the drinking norm, but to the knowledge of the researcher, no study to date has investigated the influence of others' *comments* regarding the norm. As Kenrick and Gutierrez (1980) demonstrated, comments can influence individuals' judgments of attractiveness; therefore, it could be perceived that others' comments regarding the prevalence of drinking could influence individuals' perceptions of how common drinking actually is on their campus. As real-life situations involve comments and evaluations made by peers, this is frequently encountered. These opinions may be freely given, but for the easily-influenced new college student, information in which to form a perception of norm drinking behavior may be intentionally sought out, and thus even more dangerous, as the student would pay more attention to requested responses in comparison to unrequested opinions. As the student is actively gathering information, what is the influence of a single comment on one's perception of the norm drinking behavior?

The current study thus aimed to investigate the influence of others' comments on students' perception of their campus' drinking norms. Specifically, the study intended to answer the question: does a single comment (either positive or negative) made by a peer regarding a scenario of excessive drinking influence participants' perception of the drinking norm on their university's campus? With the use of confederates, the present study hypothesized that a confederate comment regarding excessive drinking would significantly affect participants' perception of norm drinking behaviors, such that a positive / endorsing confederate comment regarding excessive drinking would significantly increase participants' estimates of drinking

behaviors on their campus, and a negative / criticizing confederate comment regarding excessive drinking would significantly decrease participants' estimates of drinking behaviors on their campus.

It was of further interest to the current study to determine whether the sex of the confederate making the comment differentially affected participants' perceptions of the male and female drinking norms. The present study broke down participants' drinking norm estimates by sex. Participants were asked to rate how often the average male and female (rated separately) student drinks, how many hours the average male and female (rated separately) student drinks at one time, how many drinks the average male and female (rated separately) student consume at one time, and how much the average male and female (rated separately) student enjoys drinking. It was hypothesized that the sex of the confederate would significantly influence the same-sex norm perceptions. Specifically, it was expected that comments made by a male confederate would affect participants' rating of the average male's drinking behavior, and comments made by a female confederate would affect participants' rating of the average female's drinking behavior.

CHAPTER 2 - Method

Participants

118 introductory psychology students at Kansas State University participated in the study in order to partially fulfill course requirements. The sample was made up of 50 (42.4%) males and 68 (57.6%) females with a mean age of 19 ($SD = 1.3$). Participants randomly participated in one of the four confederate comment conditions.

Materials and Procedure

After being read and having signed the informed consent, the experimenter explained to participants:

As the informed consent said, we are testing some stimuli to see how accurate people are at judging another person's currently experienced emotion by his or her facial expression. You will be viewing 7 pictures and asked to judge a specified person's emotion from their facial expression. Because familiarity to the pictured activity or scenario may affect accuracy in emotion recognition, we will ask you to rate how common the activity or scenario is among Kansas State undergraduate students. For example, there may be some activities / scenarios, such as surfing, that most people are familiar with, but not necessarily exposed to very often (if at all), especially here among Kansas State students. We deliberately picked pictures with a range of familiarity. We will also ask you for each picture to rate how often female and male undergraduate students at Kansas State participate in the activity or scenario, as well as how much they enjoy the activity or scenario. After completing the familiarity ratings, one person's face in the picture displayed will be identified with a red circle, and you will identify which emotions you think the identified person in the picture is experiencing based on the person's facial expressions. Do not take other people's facial expressions into account – use only the identified person's facial expression to determine his / her present emotion. Circle as many of the emotions as you believe to fit the scenario. Before we begin, we will go through 2 practice pictures so you can get the hang of things.

Pictures

Participants were shown a series of 9 pictures: 2 sample / practice pictures (going for a walk, and skiing), and 7 “actual” pictures (bowling, attending concerts, drinking alcohol, taking

dance classes, giving a presentation, knitting, and travelling by plane; see Appendix A). The third “actual” picture that participants rated portrays male and female young adults seemingly engaging in excessive drinking. This picture is the only one of interest to the study, as the rest are simply part of the facial expression emotion recognition cover story.

Picture Ratings

For each picture, participants were first asked to rate how common the activity / scenario is among Kansas State undergraduate students on a scale from 0 (*not common at all*) to 6 (*is very common*). Following this question, participants were asked to answer four questions regarding the average male undergraduate student at Kansas State’s involvement and enjoyment in the pictured activity / scenario, and then asked to answer the same four questions for the average female undergraduate student at Kansas State. The first of the four questions participants rated for the average male and female student was how often they think the average male and female (rated separately) undergraduate student at Kansas State participates in the pictured activity / scenario on a scale of 0 (*< 1 time a week*) to 7 (*7 times a week*). The second question asked participants to rate how many hours they think the average male and female (rated separately) undergraduate student at Kansas State spends doing the pictured activity / in the pictured scenario (at one time) on a scale of 0 (*< 1 hour*) to 6 (*6 + hours*). Participants were then asked to rate the average male and female (rated separately) undergraduate student at Kansas State’s involvement in the pictured activity / scenario. For each picture, this question (and likewise the scale values) varied according to what the activity / scenario was, and what is considered to be a measurement of “involvement” in that specific activity / scenario. For example, participants rated how many games the average male and female (rated separately) undergraduate student at Kansas State bowls on a 1 (*1 game*) to 7 (*7 + games*) scale, but rated how many miles the

average male and female (rated separately) undergraduate student at Kansas State goes for a walk on a 0 (*< 1 mile*) to 6 (*6 + miles*) scale. The last of the four questions for each sex asked participants to rate how much they think the average male and female (rated separately) undergraduate student at Kansas State enjoys the pictured activity / scenario on a scale of 0 (*does not enjoy at all*) to 6 (*enjoys very much*). The picture rating questions for each picture can be viewed in Appendix B.

For the drinking alcohol picture, which was the only picture of interest to the present study, participants were first asked to rate “How common is drinking alcohol among Kansas State undergraduate students?” (*how common*; 0 [*not common at all*] to 6 [*is very common*]). Then, participants responded to the following four questions regarding the average male undergraduate student at Kansas State, and then rated the same four questions for the average female undergraduate student at Kansas State: “How often do you think the average [male / female] undergraduate student at Kansas State drinks alcohol?” (*how often*; 0 [*< 1 time a week*] to 7 [*7 times a week*]), “When the average male undergraduate student at Kansas State drinks alcohol, how many hours do you think that [he / she] spends drinking (at one time)?” (*how many hours*; 0 [*< 1 hour*] to 6 [*6 + hours*]), “Within the amount of time that you previously indicated that the average [male / female] undergraduate student at Kansas State drinks alcohol, how many drinks do you think [he / she] consumes?” (*how many drinks*; 0 [*0 drinks*] to 6 [*6 + drinks*]), and “How much do you think the average [male / female] undergraduate student at Kansas State enjoys drinking alcohol?” (*how much enjoy*; 0 [*does not enjoy at all*] to 6 [*enjoys very much*]). The questions for the drinking alcohol picture can be viewed in Appendix C.

After rating the 9 question ratings for the present activity / scenario, participants then proceeded to choose from a list of 20 words (i.e., lonely, preoccupied, bored) to determine the emotion of the identified person in the picture (see Appendix D).

Confederate Comment

When the drinking alcohol picture (third in the sequence) was displayed, a confederate (either male or female) sitting near the back of the room verbally made either a positive / endorsing (“That looks like my kind of weekend!”) or a negative / criticizing (“Who actually drinks that much?”) comment in response to the picture. Following the confederate’s comment, the experimenter asked that no further responses be made, as it may influence others in the room. Pretest data ensured that the confederates were viewed as equally likeable (see pretest section below).

Suspicion

Upon completion of all of the pictures, participants were asked to indicate if they were suspicious of anything during the study. If they responded that they were suspicious, they were asked to provide an explanation of what they were suspicious of (see Appendix E).

Confederate Rating

At this point in the study, the experimenter revealed to participants that the comment made earlier was part of the study, and participants then proceeded to rate how appropriate they think it was that the confederate commented during the study (*comment appropriateness*) as well their impressions of the confederate. To measure participants’ perceptions of the comment appropriateness, participants were asked to respond to the question “What do you think of the fact that the person interrupted / spoke up in the middle of the study?” on a 7-point Likert scale from 1 (*totally inappropriate*) to 7 (*totally appropriate*). To measure participants’ perceptions of the

confederate, participants responded to the question “What was your impression of that person based upon the comment itself?” on four different 7-point Likert scales: 1 (*not at all likeable*) to 7 (*very likeable*); 1 (*bad impression*) to 7 (*good impression*); 1 (*weak person*) to 7 (*strong person*); 1 (*bad person*) to 7 (*good person*). For each of these confederate rating scales, higher values indicate a higher favorability of the appropriateness of the comment and a more favorable impression of the confederate. The appropriateness of the comment question as well as the confederate rating questions can be viewed in Appendix F.

Debriefing

After completing the confederate ratings, participants were asked to report their sex and age, and then were debriefed, thanked for participating, and dismissed.

Confederate Pretest

Method

A pretest study was conducted to ensure that the male and female confederates were similarly perceived and equally rated.

Participants

38 undergraduate introductory psychology students were recruited to participate in this online pretest study in order to partially fulfill a course requirement.

Procedure

Participants were shown a picture of each confederate (see Appendix G) and asked to rate their impression of the confederate (rated separately) on four different 7-point Likert scales (same as confederate rating scales described above): 1 (*not at all likeable*) to 7 (*very likeable*); 1 (*bad impression*) to 7 (*good impression*); 1 (*weak person*) to 7 (*strong person*); 1 (*bad person*) to 7 (*good person*). The confederate rating questions can be viewed in Appendix H. The order the

participants saw the confederate pictures was counterbalanced; participants were randomly assigned to rate either the male confederate first or the female confederate first.

Results

The four ratings for each confederate were averaged to create a composite confederate rating variable for each confederate. The composite female confederate rating had a good reliability (Cronbach's $\alpha = .87$), as did the composite male confederate rating (Cronbach's $\alpha = .91$).

Using a paired-samples t-test to compare participants' general male confederate rating and participants' general female confederate rating, no difference was found between the participants' ratings of the male and female confederate, $t(37) = -1.27, p > .05$. Participants rated the male confederate ($M = 5.23, SD = 1.24$) as similarly favorable to the female confederate ($M = 5.06, SD = 1.30$). These data indicate that any differences that might be found between the confederates in the present study would be due to the comments made by the confederates, not due to the differences between the confederates themselves.

CHAPTER 3 - Results

A total of 132 participants participated in the study, but 14 participants' data was not included for various reasons. 3 participants' data (1 male and 2 females) were discarded because of uniform responding and / or failure to follow instructions. These 3 participants were all in the female confederate negative comment condition. Two participants (1 male in the male confederate negative comment condition and 1 female in the female negative comment condition) reported not being able to hear the comment that was made by the confederate, and thus their data was not included. 1 female participant's (in the female negative condition) data was removed due to suspicion of the comment that was made. And finally, in order to obtain a

more equal sample of males and females in each condition (ideally 50% males and 50% females), 8 females' data were removed (5 from the male confederate positive comment condition, 3 from the male confederate negative comment condition) in order to maintain similar condition sizes (~30 participants). The removal of the 14 participants' data left 118 participants' data that is included in the following analyses. The demographic information of the 118 participants included in the analyses of this study was previously discussed in the method section of this paper.

Of the 118 participants utilized in the following analyses, there were 30 participants in each condition (except the female negative condition only had 28 participants), and each condition had comparable proportions of male and female participants. The male confederate negative comment condition contained 15 (50%) males and 15 (50%) females, the male confederate positive comment condition consisted of 11 (36.7%) males and 19 (63.3%) females. There were 10 (35.7%) males and 18 (64.3%) females in the female confederate negative comment condition, and there were 14 (46.7%) males and 16 (53.3%) females in the female confederate positive condition. The average ages for each condition were comparable to the overall average (19).

Because participants signed up to participate in in-person experiment sessions, the number of participants who signed up for each session differed, and thus multiple sessions were run for each condition in order to obtain the desired condition samples. The smallest session consisted of 7 participants, and the largest session consisted of 26 participants. Within each condition, sessions did not significantly differ on each of the picture ratings nor did sessions differ on each of the confederate ratings.

Descriptive Statistics

Drinking Norm Perceptions

Participants on average reported that drinking alcohol among Kansas State undergraduate students was fairly common ($M = 5.19$, $SD = .94$; 0 [*not common at all*] to 6 [*is very common*]). Collapsing across sex norm drinking, participants estimated that the average undergraduate student drinks about 2.5 times per week ($M = 2.53$, $SD = 1.08$) for around 3.3 hours (at one time; $M = 3.39$, $SD = 1.18$) and consumes about 4.5 drinks ($M = 4.56$, $SD = 1.11$). Participants also rated that the average person (collapsing across sex norms) does enjoy drinking alcohol ($M = 4.97$, $SD = .85$; 0 [*does not enjoy at all*] to 6 [*enjoys very much*]). Combining how often the average student drinks, how many hours the average student drinks, how many drinks the average student consumes, and how much the average student enjoys drinking, participants generally thought that norm drinking behavior (collapsing across sex norms) was relatively high ($M = 3.86$, $SD = .79$; minimum possible rating = 0, maximum possible rating = 6.25).

Participants estimated that the average male undergraduate student drinks close to 3 times a week ($M = 2.87$, $SD = 1.06$) for just over 3.5 hours (at one time; $M = 3.66$, $SD = 1.24$). Participants estimated that at one time, the average male drinks more than 5 drinks ($M = 5.20$, $SD = .95$) and that he enjoys drinking quite a bit ($M = 5.19$, $SD = .78$; 0 [*does not enjoy at all*] to 6 [*enjoys very much*]). Participants estimated that the average female undergraduate student drinks a little over 2 times a week ($M = 2.19$, $SD = 1.09$) for just over 3 hours (at one time; $M = 3.11$, $SD = 1.12$). The average female student was estimated to drink close to 4 drinks (at one time; $M = 3.92$, $SD = 1.26$), and participants estimated that she does enjoy drinking ($M = 4.75$, $SD = .92$; 0 [*does not enjoy at all*] to 6 [*enjoys very much*]).

Drinking Norm Perceptions

How Common

To test the differences of participant sex, confederate sex, and confederate comment on participants' perception of norm drinking behavior, a 2 (*participant sex: male / female*) x 2 (*confederate sex: male / female*) x 2 (*confederate comment: positive / negative*) three-way between-subjects factorial ANOVA was performed on participants' responses to the question "How common is drinking alcohol among Kansas State undergraduate students?" The means and standard deviations are displayed in Table 1 and results from the ANOVA are displayed in Table 2. Overall, participants rated that drinking alcohol among Kansas State undergraduate students is fairly common ($M = 5.19, SD = .94$; 0 [*not common at all*] to 6 [*is very common*]). There were not any significant main effects nor were any of the interactions significant (all ps n.s.).

How Often

To test the differences of participant sex, confederate sex, and confederate comment and to compare participants' estimates of how often males and females drink alcohol, a four-way repeated measures 2 (*participant sex: male / female*) x 2 (*confederate sex: male / female*) x 2 (*confederate comment: positive / negative*) x 2 (*sex norm perception: male norm perception / female norm perception*) mixed factorial ANOVA was conducted. For the ANOVA, *participant sex*, *confederate sex*, and *confederate comment* were used as between-subjects independent variables, and a repeated measure variable was created to compare participants' within-subject male and female sex norm perceptions of how often the average person of each sex consumes alcohol. The means and standard deviations are displayed in Table 3 and results from the ANOVA are displayed in Table 4. Participants overall rated that the average undergraduate student drinks around 2.5 times per week ($M = 2.53, SD = 1.08$; 0 [*< 1 time a week*] to 7 [*7 times a week*]). There was a significant main effect of sex norm perception, $F(1, 110) = 74.64, p <$

.001. Participants estimated that the average male drinks more often ($M = 2.87$, $SD = 1.06$) than the average female does ($M = 2.19$, $SD = 1.09$). There was not a significant main effect of participant sex, confederate sex, confederate comment, nor were there any significant interactions (all ps n.s.).

How Many Hours

To test the differences of participant sex, confederate sex, and confederate comment and to compare participants' estimates of how many hours males and females drink alcohol at one time, a four-way repeated measures 2 (*participant sex: male / female*) x 2 (*confederate sex: male / female*) x 2 (*confederate comment: positive / negative*) x 2 (*sex norm perception: male norm perception / female norm perception*) mixed factorial ANOVA was conducted. For the ANOVA, *participant sex*, *confederate sex*, and *confederate comment* were used as between-subjects independent variables, and a repeated measure variable was created to compare participants' within-subject male and female sex norm perceptions of how many hours the average person of each sex consumes alcohol at one time. The means and standard deviations are displayed in Table 5 and results from the ANOVA are displayed in Table 6. Participants overall rated that the average undergraduate student drinks for around 3.5 hours ($M = 3.39$, $SD = 1.18$; 0 [< 1 hour] to 6 [$6 +$ hours]). There was a significant main effect of sex norm perception, $F(1, 110) = 48.60$, $p < .001$. Participants estimated that the average male drinks for more hours at a time ($M = 3.66$, $SD = 1.24$) than the average female does ($M = 3.11$, $SD = 1.12$). There was also a significant main effect of participant sex, $F(1, 110) = 11.53$, $p = .001$. Female participants estimated that the average person drinks for more hours ($M = 3.68$, $SD = 1.14$) than male participants estimated ($M = 2.99$, $SD = 1.12$). There was not a significant main effect of confederate sex, confederate comment, nor were there any significant interactions (all ps n.s.).

How Many Drinks

To test the differences of participant sex, confederate sex, and confederate comment and to compare participants' estimates of how many drinks males and females consume at one time, a four-way repeated measures 2 (*participant sex: male / female*) x 2 (*confederate sex: male / female*) x 2 (*confederate comment: positive / negative*) x 2 (*sex norm perception: male norm perception / female norm perception*) mixed factorial ANOVA was conducted. For the ANOVA, *participant sex*, *confederate sex*, and *confederate comment* were used as between-subjects independent variables, and a repeated measure variable was created to compare participants' within-subject male and female sex norm perceptions of how many drinks the average person of each sex consumes at one time. The means and standard deviations are displayed in Table 7 and results from the ANOVA are displayed in Table 8. Participants on average reported that the average undergraduate student consumes around 4.5 drinks ($M = 4.56$, $SD = 1.11$; 0 [0 drinks] to 6 [6 + drinks]). There was a significant main effect of sex norm perception, $F(1, 110) = 230.73$, $p < .001$. Participants estimated that the average male ($M = 5.20$, $SD = .95$) consumes more drinks at one time than does the average female ($M = 3.92$, $SD = 1.26$). There were not significant main effects of participant sex, confederate sex, or confederate comment, nor were any of the interactions significant (all ps n.s.).

How Much Enjoy

To test the differences of participant sex, confederate sex, and confederate comment and to compare participants' estimates of how much males and females enjoy drinking alcohol, a four-way repeated measures 2 (*participant sex: male / female*) x 2 (*confederate sex: male / female*) x 2 (*confederate comment: positive / negative*) x 2 (*sex norm perception: male norm perception / female norm perception*) mixed factorial ANOVA was conducted. For the ANOVA,

participant sex, *confederate sex*, and *confederate comment* were used as between-subjects independent variables, and a repeated measure variable was created to compare participants' within-subject male and female sex norm perceptions of how much the average person of each sex enjoys drinking alcohol. The means and standard deviations are displayed in Table 9 and results from the ANOVA are displayed in Table 10. Participants on average reported that the average student does enjoy drinking alcohol ($M = 4.97$, $SD = .85$; 0 [*does not enjoy at all*] to 6 [*enjoys very much*]). There was a main effect of sex norm perception, $F(1, 110) = 49.14$, $p < .001$. Participants estimated that the average male ($M = 5.19$, $SD = .78$) enjoys drinking more than does the average female ($M = 4.75$, $SD = .92$). There were not significant main effects of participant sex, confederate sex, or confederate comment, and likewise there were no significant interaction effects (all ps n.s.).

General Norm Drinking Behavior

To test the differences of participant sex, confederate sex, and confederate comment and to compare participants' estimates of the general male and female norm drinking behavior, a four-way repeated measures 2 (*participant sex: male / female*) x 2 (*confederate sex: male / female*) x 2 (*confederate comment: positive / negative*) x 2 (*sex norm perception: male norm perception / female norm perception*) mixed factorial ANOVA was conducted. For the ANOVA, *participant sex*, *confederate sex*, and *confederate comment* were used as between-subjects independent variables, and a repeated measure variable was created to compare participants' within-subject male and female general drinking norm perception. The general norm drinking behavior perception for each sex was computed as the average rating of: how often the average male / female drinks alcohol, how many hours the average male / female drinks alcohol at one time, how many drinks the average male / female consume at one time, and how much the

average male / female enjoys drinking. These composite variables showed relatively good reliability (General male drinking norm: Cronbach's $\alpha = .68$; General female drinking norm: Cronbach's $\alpha = .75$). Three of these four question responses were on a 0 to 6 Likert scale, and the fourth question's possible responses ranged from 0 to 7. Thus, the male and female norm drinking behavior composite variables had a minimum possible average rating of 0 and a maximum possible average rating of 6.25.

The means and standard deviations are displayed in Table 11 and results from the ANOVA are displayed in Table 12. The general norm drinking behavior composite variable showed that participants generally thought that norm drinking behavior was relatively high ($M = 3.86$, $SD = .79$). There was a main effect of sex norm perception, $F(1, 110) = 211.11$, $p < .001$. Participants estimated that the general drinking norm was higher among males ($M = 4.23$, $SD = .73$) than the general drinking norm for females ($M = 3.49$, $SD = .84$). There was also a significant main effect of participant sex, $F(1, 110) = 4.97$, $p = .028$. Female participants estimated that norm drinking behavior (not separated by sex) was greater ($M = 4.00$, $SD = .75$) than what male participants estimated ($M = 3.69$, $SD = .80$). There was not a significant main effect of confederate sex, confederate comment; furthermore, there were no significant interaction effects (all ps n.s.).

Drinking Norm Perceptions Summary

Across the ANOVAs testing the effects of participant sex, confederate sex, confederate comment, and norm drinking behavior of each sex (for the repeated measure ANOVAs) on participants' perceptions of drinking norms, it was found that in regard to how often people drink, how many hours people drink, how many drinks people consume, and how much people enjoy drinking, there were significant main effects of sex norm perception (all $ps < .05$). In each

instance, participants responded that the male drinking norm is higher than the female drinking norm: the average male is estimated to drink more often, drink for more hours, consume more drinks, and enjoy drinking more than the average female is. The general norm drinking behavior composite variable likewise reflects that participants estimate that the male drinking norm is higher than that of the female drinking norm ($p < .05$).

In addition to the effects of sex norm perception, there were also two ANOVAs that showed a significant difference between male participants' and female participants' estimation of how much the average person drinks (collapsed across sex norms). For both how many hours the average person drinks and the general norm drinking behavior composite variable, female participants responded that the drinking behavior was higher than male participants estimated ($p < .05$).

Confederate Ratings

Comment Appropriateness

To test the main effects and interaction effects of participant sex, confederate sex, and confederate comment on participants' rating of how appropriate it was that the confederate interrupted / spoke up in the middle of the study, a 2 (*participant sex*) x 2 (*confederate sex*) x 2 (*confederate sex*) between-subjects factorial ANOVA was conducted on the comment appropriateness (1 [*totally inappropriate*] to 7 [*totally appropriate*]). The means and standard deviations are displayed in Table 13 and results from the ANOVA are displayed in Table 14. On average, participants rated the fact that the confederates interrupted / spoke up in the middle of the study as fairly inappropriate ($M = 2.81, SD = 1.37$). There was a significant main effect of participant sex, $F(1, 110) = 4.06, p = .046$. Male participants ($M = 3.10, SD = 1.25$) rated the comment as more appropriate than did female participants ($M = 2.59, SD = 1.42$). There was not

a significant main effect of confederate sex, confederate comment, nor were there any significant interaction effects (all ps n.s.).

Likeableness

In order to test the main effects of participant sex, confederate sex, and confederate comment, as well as all interaction effects on participants' impression of the confederates' likeableness, a 2 (*participant sex*) x 2 (*confederate sex*) x 2 (*confederate sex*) between-subjects factorial ANOVA was conducted on the confederate likeableness (1 [*not at all likeable*] to 7 [*very likeable*]). The means and standard deviations are displayed in Table 15 and results from the ANOVA are displayed in Table 16. On average, participants rated their impression of the confederates' likeableness as generally neutral ($M = 3.65$, $SD = 1.15$). There was a significant main effect of confederate comment, $F(1, 110) = 4.83$, $p = .030$. Participants overall liked the confederates more when the confederates said the negative / criticizing excessive drinking comment ($M = 3.90$, $SD = 1.02$) than when they said the positive / endorsing excessive drinking comment ($M = 3.42$, $SD = 1.23$).

Bad / Good Impression

To test the main effects and interaction effects of participant sex, confederate sex, and confederate comment on how bad / good of an impression the participants had of the confederates, a 2 (*participant sex*) x 2 (*confederate sex*) x 2 (*confederate sex*) between-subjects factorial ANOVA was conducted on the good / bad impression confederate rating (1 [*bad impression*] to 7 [*good impression*]). The means and standard deviations are displayed in Table 17 and results from the ANOVA are displayed in Table 18. Participants overall rated that they had slightly negative impressions of the confederates ($M = 3.03$, $SD = 1.19$). There was a significant main effect of confederate comment, $F(1, 110) = 12.71$, $p = .001$. Participants had a

better impression of the confederates who said the negative / criticizing excessive drinking comment ($M = 3.41$, $SD = 1.03$) than the confederates who said the positive / endorsing excessive drinking comment ($M = 2.65$, $SD = 1.23$). There was not significant main effect of participant sex or confederate sex, and there were also no significant interactions (all ps n.s.).

Weak / Strong Person

In order to test the effects of participant sex, confederate sex, and confederate comment on participants' impressions of how weak / strong the confederates were, a 2 (*participant sex*) x 2 (*confederate sex*) x 2 (*confederate sex*) between-subjects factorial ANOVA was conducted on the weak / strong person rating (1 [*weak person*] to 7 [*strong person*]). The means and standard deviations are displayed in Table 19 and results from the ANOVA are displayed in Table 20. Participants on average rated the confederates as somewhat strong ($M = 4.13$, $SD = 1.02$). There was a significant main effect of confederate comment, $F(1, 110) = 3.99$, $p = .048$. Participants rated the confederates who said the negative / criticizing excessive drinking comment as stronger ($M = 4.31$, $SD = .96$) than the confederates who said the positive / endorsing excessive drinking comment ($M = 3.95$, $SD = 1.05$). There was also a significant main effect of participant sex, $F(1, 110) = 6.30$, $p = .014$. Female participants rated the confederates as stronger ($M = 4.32$, $SD = 1.01$) than did male participants ($M = 3.86$, $SD = .97$). There was not a significant main effect of confederate sex, nor were there any significant interactions.

Bad / Good Person

To test the main effects and interaction effects of participant sex, confederate sex, and confederate comment on how bad / good the participants were, a 2 (*participant sex*) x 2 (*confederate sex*) x 2 (*confederate sex*) between-subjects factorial ANOVA was conducted on the good / bad person confederate rating (1 [*bad person*] to 7 [*good person*]). The means and

standard deviations are displayed in Table 21 and results from the ANOVA are displayed in Table 22. On average, participants rated the confederates as somewhat good ($M = 4.17$, $SD = .80$). There was a significant main effect of confederate comment, $F(1, 110) = 9.38$, $p = .003$. Participants thought that the confederates who said the negative / criticizing excessive drinking comment were better people ($M = 4.40$, $SD = .88$) than confederates who said the positive / endorsing excessive drinking comment ($M = 3.95$, $SD = .65$). There were no significant main effects for participant sex or confederate sex, nor were there any significant interaction effects (all ps n.s.).

General Confederate Rating

In order to test the main effects of participant sex, confederate sex, and confederate comment, as well as interaction effects on participants' general confederate rating, a 2 (*participant sex*) x 2 (*confederate sex*) x 2 (*confederate sex*) between-subjects factorial ANOVA was conducted on the general confederate rating composite variable that is an average of participants' rating of the confederates' likeableness, bad / good impression, weak / strong person, and bad / good person (minimum possible rating = 1, maximum possible rating = 7). The composite variable had a good reliability (Cronbach's $\alpha = .72$). The means and standard deviations are displayed in Table 23 and results from the ANOVA are displayed in Table 24. Overall, participants rated the confederates as slightly more favorable than neutral ($M = 3.74$, $SD = .78$). There was a significant main effect of confederate comment, $F(1, 110) = 13.18$, $p < .001$. Participants overall had a more favorable impression of the confederates who said the negative / criticizing excessive drinking comment ($M = 4.00$, $SD = .65$) than of the confederates who said the positive / endorsing excessive drinking comment ($M = 3.49$, $SD = .82$). There were no main

effects of participant sex nor confederate sex, and there were not significant interaction effects (all ps n.s.).

Confederate Ratings Summary

To summarize the confederate rating results, participants overall had a better impression of confederates who made a negative / criticizing comment regarding excessive drinking than of the confederates who made a positive / endorsing comment. Participants rated the confederates as more likeable, having made a better impression, a stronger person, and a better person when the comment that the confederates made was negative / criticizing excessive drinking (all $ps < .05$). The general confederate rating composite variable likewise reflects that participants rate the confederates who make the comment that is negative / criticizing of excessive drinking as more favorable than confederates who make a positive / endorsing comment about excessive drinking ($p < .05$).

In addition to the effects of confederate comment, there were also two ANOVAs that showed a significant difference between male participants' and female participants' ratings. Male participants rated that the confederates' comments were more appropriate than female participants did, and female participants rated the confederates as stronger than male participants did (both $ps < .05$). These are not considered to be particularly important or interesting results, and could very well be due to random error. However, these results are not surprising. It is a common stereotype that females put more emphasis on being socially polite than do males, thus it could be that female participants in this study were less likely to excuse inappropriately timed comments in inappropriate contexts than were males. Additionally, because males are commonly stereotyped as being stronger and more concerned with strength (both physical and emotional)

than females, it could be that male participants rated the confederates more critically in terms of strength than did female participants.

Due to the number of comparisons that were performed on the confederate ratings, it should be mentioned that the results of the confederate ratings should be interpreted with caution, and the corresponding *p*-values should not be regarded as conservative, as no Bonferroni adjustment was done to compensate for the number of comparisons. However, it is also important to note that the general confederate rating variable, which is a composite variable of the four confederate impression ratings, showed similar results to each of the individual impression ratings. Because the composite confederate rating does not need to be adjusted in order to compensate for conservativeness, it may be interpreted without the previously mentioned caution.

CHAPTER 4 - Discussion

Influence of Confederate Comment

The current study investigated the influence of a confederate's comment on participants' perception of norm drinking behaviors. Specifically, it was hypothesized that a positive / endorsing confederate comment regarding excessive drinking would increase participants' estimates of how common drinking is on their campus, and a negative / criticizing confederate comment regarding excessive drinking would decrease participants' estimates of how common drinking is on their campus; however, no significant effect of confederate comment was found for any of the participants' estimates of norm drinking behavior.

The present study also explored if the sex of the confederate who made the comment regarding excessive drinking differentially affected participants' perceptions of the male and female drinking norms. It was hypothesized that the sex of the confederate would significantly

influence the same-sex norm perceptions such that comments made by a male confederate would affect participants' estimates of the average male undergraduate student's drinking, and comments made by a female confederate would significantly affect participants' estimates of the average female undergraduate student's drinking. Again, no support was found for the influence of confederate sex on participants' sex norm perceptions.

The lack of expected findings is not consistent with Kenrick and Gutierrez' (1980) study on the influence of confederates' comments regarding the attractiveness of previously-rated-average female faces. Kenrick and Gutierrez found that confederates' comments significantly influenced participants' attractiveness ratings of the female faces in the direction of the comments such that participants who heard the confederates' negative comments rated the pictured female face as less attractive, and participants who heard the confederates' positive comments rated the pictured female face as more attractive. Though the present study's methodology is similar to Kenrick and Gutierrez', the two studies have obvious differences in both stimuli and responses.

While Kenrick and Gutierrez' (1980) study explored the influence of others' comments on judgments of attractiveness, the present study sought to investigate the influence of others' comments on perceptions of norm drinking behaviors. The female faces that were shown in Kenrick and Gutierrez' study were new to participants – they had never previously seen the females in the pictures. Thus, their perception of the females' attractiveness may have been more influenceable. As participants came into the present study with previously-formed drinking norms, it is understandable that the comments did not have the expected impact. Because college students are frequently exposed to drinking (Borsari & Carey, 2001; White, Labouvie, & Papadaratsakis, 2005), whether it be through firsthand experience or observation, or from

second-hand accounts of the prevalence of drinking, it is possible that their perceptions of the drinking norm were fairly solidified prior to the study. The comment may have failed to influence participants' perceptions of the norm because the participants' felt that they already had a fairly accurate idea of how often / how many hours / and how much alcohol is actually consumed. This is ironic, however, because the misperception research consistently shows that people are actually *bad* at estimating norms based on experience and observation. Regardless of accuracy, students' perceptions of drinking norms may be hard to change because they are so solidified.

Confederate Ratings

Though the present study did not find support for the predicted influence of confederates' comments on norm perceptions, the comments *did* influence participants' ratings of the confederates. Participants' favorability toward the confederates significantly differed depending on the comment that the confederate made. Confederates who made a positive / endorsing comment regarding excessive drinking were seen as less favorable than confederates who made a negative / criticizing comment regarding excessive drinking. Though the ratings of the confederates were potentially influenced by the fact that the confederates spoke up at an inappropriate time and in an inappropriate context, this should have equally affected the ratings of both confederates.

It is acknowledged that a possible limitation of these results is that before rating the confederate, it was revealed to participants that the confederate's comment was planned and part of the study. Participants' ratings of the confederates were completed *after* the participants had the knowledge that the confederate was supposed to make the comment that he / she made. It is likely then that the participants' ratings of the comments' appropriateness does not accurately

reflect how appropriate they thought the comment was at the time that it was made. Thus, the influence of the confederates' comments on the participants' ratings of how appropriate the comment was should be interpreted with caution.

In hindsight, it makes sense that the confederates' comments had more of an influence on participants' perceptions of the confederates rather than the perceptions of the norm. As previously discussed, participants' perceived drinking norms may have been so solidified that they were reluctant to adjust their norms to incorporate new information, and instead of influencing the norm, the confederates' comments influenced participants' perceptions of the confederates. Congruity theory offers a possible explanation for this: Congruity theory (Osgood & Tannenbaum, 1955; Petty & Cacioppo, 1996) explains that when a source and a concept are associated such that the source makes an assertion about the concept, one must change his / her attitudes about both the source and the concept in order to maintain congruity. Congruity is reached when either: a source and a concept are associated and are evaluated equally, or a source and a concept are not associated and are oppositely evaluated. If one feels more strongly about the source or the concept, he / she will likely change one evaluation more than the other. In the present study, participants heard a confederate make an assertion about excessive drinking, thus, participants had to change their attitudes about the confederate and / or their drinking norm perception. Because the confederates were not associated with the drinking norm, and participants most likely held a neutral evaluation of the confederates prior to the assertion, the confederates and the perceived drinking norm were not equally evaluated. Thus, participants must change their attitudes about either: both the confederate and their perceived drinking norm, their perceived drinking norm (because they feel strongly about the confederate, which is unlikely), or the confederate (because they feel strongly about their perceived drinking norm). It

is unlikely that the participants felt strongly about the confederates prior to the comments, and as previously argued, it is likely that participants did feel strongly about their alcohol norm perceptions; thus, it makes the most sense that participants would change their attitudes about the confederate, and not their perceived drinking norm, in order to maintain congruity.

Another possible explanation for why the confederates' comments may have influenced participants' ratings of the confederate but not participants' drinking norm perceptions is that though the confederates in this study seemed to be average undergraduate students, participants may have re-categorized the confederates when the confederates made the comments, and no longer considered the confederate to be representative of the "average" student. Participants did not have any previous knowledge or experience with the confederates, so they had no indications of whether the confederates were actually representative of students on their campus. Upon hearing the comment that was made, participants might have subtyped the confederate who made the comment and removed them from their "average student" category. Subtyping, a term from the stereotype literature, occurs when people encounter an individual who violates a stereotype of the group that he / she belongs to, but instead of modifying the stereotype about that group, people subtype the individual and consider the individual to be atypical and non-representative (i.e., an exception) of the rest of his / her group (Allport, 1954; Kunda & Oleson, 1995). Stereotypes are thus very resistant to change, and subtyping serves as a way for people to maintain those stereotypes. As suggested by the present results, it is probable that participants in this study may have subtyped the confederates upon hearing the comment rather than incorporating the information and adjusting their drinking norm perception. If this is the case, the findings of this study suggest that norm perceptions may function very similarly to stereotypes;

people may be very reluctant to modify their norm perceptions, which would unfortunately suggest that social norm perceptions may be very difficult to change.

Both of these explanations offer plausible explanations for why the confederates' comments influenced participants' ratings of the confederates but not drinking norm perceptions; however, the question is then raised which explanation actually explains the comments' influences. Congruity theory suggests that participants felt neutrally toward the confederates to begin with, and then changed their attitudes toward the confederates after they made the comment because the participants were less willing to change their drinking norm perceptions. Subtyping conversely suggests that participants viewed the confederates as representative of the "average" student prior to the comments, but then subtyped the confederates (no longer considering them to be typical) in an effort to avoid modifying their norm perceptions. Given this study alone, it is impossible to know which theory best explains the results. Thus, further studies would need to be conducted in order to compare the two explanations. This could be accomplished by asking participants to rate both before and after the comment if they perceive the confederate to be representative of the "average" student along a variety of dimensions, including in terms of drinking behavior, and to rate their attitude toward the confederate. If participants rated the confederate as representative of the average student before but not after the comment, it would indicate that the comment influenced the rating of the confederate because participants subtyped the confederate (no longer saw them as being typical, but an exception). However, if participants' attitude toward the confederate changed (rating the confederate as being neutral before but not after the comment), it would suggest that the comment's influence is due to congruity theory. Interestingly, it is also possible that a combination of these two effects

would occur (that the confederate would be evaluated as atypical and more extreme as a result of the comment). This would be a particularly interesting possibility.

Although a third possible explanation of why the confederates' comments influenced participants' ratings of the confederate but not their drinking norm perceptions might be social desirability (Strahan & Gerbasi, 1972), in fact, when social desirability was covaried out of the analyses, the effects remained. Therefore, social desirability cannot be used to explain the obtained results.

Misperception of Alcohol Norms

Recent surveys of Kansas State University undergraduate students have shown that 82% of students report consuming alcohol (Kansas State University Counseling Services, 2011), which is comparable to the national percentage for college students (83.9%; Core Institute, 2010). It can thus be assumed that the participants in the present study are comparable to college students in previous misperception research. Previous research shows that about one-third of college students drink fewer than five drinks per week, and almost half of college students do not regularly drink (Wechsler, Molnar, Davenport, & Baer, 1999).

Participants in the present study reported that drinking alcohol on their university campus was fairly common, and that the average student drinks around two or three times a week for around three hours at a time. Participants estimated that within that time, the average student consumes between four and five drinks, which is comparable to participants in previous studies' perceptions of drink consumption at one time (i.e., Suls & Green, 2003). Given the estimates of how often the average student drinks and how many drinks the average student consumes at one time, participants in the present study estimated that the average student drinks roughly between eight to fifteen drinks per week. Thus, our study seems to be consistent with previous research

that students misperceive – specifically overestimate – others’ alcohol consumption (Berkowitz, 2005 and Perkins, 2003).

Previous studies on drinking perceptions have focused on the frequency, duration, and quantity of alcohol consumption (similar to the present study), but have only asked about perceived comfort in addition to the consumption measures. Thus, the current study extended previous research by asking participants to estimate the average students’ *enjoyment* of alcohol. Not surprisingly, participants in the present study estimated that the average student does in fact enjoy drinking alcohol.

Participant Sex and Sex Norm Perception Differences

An unpredicted finding of the present study that was not explicitly hypothesized, but is still of interest, is the difference between male and female participants’ estimates of male and female drinking norms. Both male and female participants estimated that the average male undergraduate student drinks more often, for more hours at a time, consumes more drinks, and enjoys drinking more, than the average female undergraduate student does. This intuitively makes sense due to the definition of binge drinking as 5 or more drinks for males, and 4 or more drinks for females (NIAAA, 2004). Because males are supposedly *able* to drink more than females due to their larger body size, most people assume that males *do* drink more. Research has, in fact, demonstrated this: males actually do drink more than females (Clements, 1999; Lewis & Neighbors, 2006a; McCabe, 2002; O’Malley & Johnston, 2002) and are likewise *perceived* as consuming more drinks (in excess: Suls & Green, 2003; during a specified amount of time: Clements, 1999) and drinking more frequently (Lewis & Neighbors, 2004). Additionally, research has found that males are perceived to be more comfortable with alcohol consumption (DeMartini, Carey, Lao, & Luciano, 2011; Suls & Green, 2003; Synnott, 2012).

The present study's significant differences between participants' perceptions of the male and female drinking behavior are thus consistent with past research. The current study does, however, extend the previous research by looking at the male and female perceptions of *enjoyment* of drinking alcohol. In addition to participants perceiving that males drink more often, drink for more hours at a time, and consume more drinks than do females, the present study found that participants perceived that males enjoy drinking significantly more than females do.

Though the present study's sex norm perception data resembles previous research, the findings of the present study regarding *participant sex* differences of norm perception are not consistent with previous literature. The few studies that have looked at participant sex differences in estimated drinking behaviors have found either no difference between males' and females' perceptions (Lewis & Neighbors, 2004; DeMartini, Carey, Lao, & Luciano, 2011), or that males estimate higher drinking norms than females (Suls & Green, 2003; Lewis & Neighbors, 2004). The results of the present study are partially consistent with this research; male and female participants did not differ in their estimations of how often the average student drinks, how many drinks the average student consumes, and how much the average student enjoys drinking alcohol; however, contrary to previous studies, the current study found that female participants estimated that the average person drank for more hours at a time than did male participants. Additionally, female participants' overall composite drinking estimates were higher than male participants'.

Though this finding is counter to previous studies' results this *is* parallel to the findings of some studies that suggest female college student alcohol consumption is increasing and approaching male alcohol consumption levels (Maney, 1990). This raises the question of causation: are females' perceptions of drinking norms increasing which results in an increase in

their alcohol consumption, or are females increasing their alcohol consumption, which results in the adjusting of their perceived norms? This question is of course impossible to test experimentally, but regardless of causation, the possibilities raise concerns for females' alcohol consumption. Previous studies on gender-specific norm misperceptions have suggested that social norm intervention techniques need to tailor feedback to be gender specific, so that males receive male drinking norm information and females receive female drinking norm information (Lewis & Neighbors, 2004; 2006a; 2006b). Given the present study's findings, this seems to be even more important. In addition to tailoring feedback for males and females, social norm interventions should give additional attention to correcting females' norm perceptions.

Limitations

Comment Strength

As previously discussed, the confederate comments' lack of influence on participants' perceptions of drinking behaviors could be due to participants' efforts to maintain their drinking norm perception; however, it is also acknowledged that the lack of findings could be attributable to limitations of the present methodology. It is possible that the comments used ("That looks like my kind of weekend!" and "Who actually drinks that much?") were not strong enough to influence participants' norm perceptions. Changing the comments to explicitly address descriptive norms (actual drinking behavior) may have differential effects on perceptions. Comments that explicitly address descriptive norms would directly indicate the frequency and / or quantity of norm drinking behavior, such as: "Everyone I know drinks like that" and "I go to a lot of parties, but I've never seen anyone drink like that." Comments directly addressing descriptive norms might be more effective by indicating norm behavior more strongly than the current study's utilized comments. The current study's comments did not both address

descriptive norms, and particularly the positive / endorsing comment (“That looks like my kind of party!”) better addressed injunctive norms (approval of drinking), which may not be as influential in regard to influencing norm perceptions. Additionally, changing the comments to imply that more people approve or disapprove of excessive drinking may strengthen the comments; the present study’s comments only indicated the confederates’ own drinking attitudes, and not necessarily the norm.

Confederate Unfamiliarity

Another possible limitation of the present study is participants’ lack of familiarization with the confederates. It is possible that the comments did not have the expected results because, as previously discussed, participants changed their judgment of the confederate rather than of the drinking norm when they heard the comment. As the drinking norm may be more solidified, having been formed by witnessing others’ behaviors (though this leads to misperceptions of the norm), it is likely that participants were unwilling to adjust their norm perception based on information from an unknown source. Participants had no indications of the confederates’ accuracy or knowledge about the drinking norm, and thus may have discredited and ignored the comment. Previous research has found that as the closeness of a relationship increases, likewise the influence on another’s drinking behavior increases (Borsari & Carey, 2006). Because participants in this study had no relationship whatsoever with the confederates, the influence the confederates’ comments had on participants’ drinking norm perception is probably very low, and, as the results of the present study suggest, nonexistent.

Participants’ Own Drinking

A further limitation of the present study was that participants were only asked to report their perceptions of the average male and female undergraduate students’ drinking behaviors, but

not to report their own. Though the research on alcohol norm misperceptions is consistent in demonstrating that students overestimate how much others drink, and, as previously discussed, participants in the present study seem to show comparable trends of misperception, it is possible that participants' own drinking behaviors could have made a difference in receptivity to the confederates' comments. Particularly, the more a participant drinks, the more likely they might have been to disregard the negative / criticizing comment. When the confederate said the comment "Who actually drinks that much?" participants who drink more might be more likely to disregard the comment than participants who drink less. Conversely, participants who hear the positive / endorsing comment may have been more likely to disregard the comment the less they actually drink. Because the present study did not measure participants' own rates of drinking in addition to the drinking norm perceptions, it is unable to determine the potential influence of participants' own drinking habits on the reception of the comment.

Future Research

Further research is needed to get a better understanding of what influences students' drinking perceptions. Future studies should continue to explore the influences on drinking norm perceptions, and specifically the influence of comments. Because college students frequently encounter peers telling stories or making comments about their own or others' drinking habits, it is important to determine what the influence is on the receiver's perception of the drinking norm. Given the present study's findings, research should continue to investigate comments' influence on college students' norm perception, and the factors that may contribute to the effectiveness of the comment.

The present study previously discussed the strength of the comment as a potential factor that influences students' drinking perception. Changing the comment to directly address

descriptive norms and / or imply everyone else's behavior may potentially increase a comment's influence on a person's norm. Similarly, the comment could be altered to reflect the confederate's level of "expertise" on the topic. Using a comment such as "I've been to a lot of parties, and that looks about right!" or "I've been to a lot of parties, but I've never seen anyone drink like that!" may be stronger than comments that do not explicitly indicate the commenter's knowledge and experience with drinking.

The confederate's level of knowledge on the topic could also be altered by manipulating the status of the commenter to increase perceived credibility. This could be done by manipulating the supposed grade level of a confederate (freshman vs. senior), which could influence others' perception of how much experience that person has with college drinking. This could also be achieved by having more than one confederate. By having another confederate to agree with the comment, it may increase participants' perception of the comment as credible and the confederate who made the comment as knowledgeable. Alternatively, having two comments verbalized could potentially have a greater influence on participants' perceptions of the norm. Future research could also manipulate the previous experience with the commenter in order to determine if that impacts the comments' influence. This could be manipulated by having participants converse with a confederate before the study to establish acquaintance, or by having a student in a class make a comment.

Future studies could also explore the differences of context in which the comment is made in. It is possible that comments about drinking are given more weight in different contexts. This could entail manipulating the setting in which the comment is made, or the overall content of the conversation in which the comment is made. A comment made (i.e., "That looks like my kind of party!") might influence norm perceptions more when it is made actually at a party rather

than sitting in a classroom in response to a picture. Likewise, a comment may be more influential if it is made during a conversation about drinking, rather than offhandedly without the relevant conversation surrounding it.

Implications and Contributions

The present study was the first to investigate the influence of a comment on students' perceptions of drinking norms. As with any study, and as previously acknowledged, there are obvious limitations that potentially hindered the results; however, the present study still has many important contributions to the literature on drinking norms and notable implications for future research and the application of the present results.

A surprising finding of the present study was females' higher estimation of the average students' drinking norm. Though this finding is counter to previous studies' results (as previously discussed), this *is* parallel to the findings of some studies that suggest female college student alcohol consumption is increasing and approaching male alcohol consumption levels (Maney, 1990). This raises the question of causation: are females' perceptions of drinking norms increasing which results in an increase in their alcohol consumption, or are females increasing their alcohol consumption, which results in the adjusting of their perceived norms? This question is of course impossible to test experimentally, but regardless of causation, the possibilities raise concerns for females' alcohol consumption. Previous studies on gender-specific norm misperceptions have suggested that social norm intervention techniques need to tailor feedback to be gender specific, so that males receive male drinking norm information and females receive female drinking norm information (Lewis & Neighbors, 2004; 2006a; 2006b). Given the present study's findings, this seems to be even more important. In addition to tailoring feedback for

males and females, social norm interventions should give additional attention to correcting females' norm perceptions.

In regard to the influence of the comments on participants' perceptions of norm drinking, the comments did not seem to influence perceptions. This is encouraging that the positive / endorsing comment regarding excessive drinking did not influence participants' perceptions. However, conversely, it is discouraging that the negative / criticizing comment regarding excessive drinking likewise did not influence perceptions. Though this implies that someone who verbally criticizes excessive drinking will not help correct others' perceptions of how much everyone else drinks, the results also imply the more hopeful perspective that someone who verbally endorses excessive drinking is not any more influential. Additionally, the present study found that though the comments did not influence participants' perceptions of norm drinking, they did alter participants' judgments of the commenter. The confederates who endorsed excessive drinking behavior were rated as less favorable than the confederates who criticized excessive drinking behavior. The implication of this is that someone who verbally endorses drinking will be seen more negatively than a person who criticizes it. This could be used to encourage people to vocalize their disapproval of excessive drinking.

The current study furthermore contributed to our understanding of college drinking perceptions by incorporating specific measures of drinking behavior and enjoyment with gender-specific norm perceptions. Furthermore, the present study implemented comments to investigate the influence of others' comments regarding excessive drinking on drinking norm perceptions. Being the first study to explore the influence of comments on drinking norms, it is hoped that in doing so, this study has opened up a new area of research to be explored in the efforts to better understand the influences on college drinking norm perceptions. Given that the misperception of

others' alcohol use is prevalent on college campuses across the U.S., and the implications that these misperceptions have for the high college drinking rates, it is extremely important to research and understand how and why these misperceptions are formed. With a better understanding of what information is used to form these misperceptions and what does and does not influence them, prevention and intervention programs can utilize the information to more effectively decrease excessive drinking among college students.

References

- Allport, G. W. (1954). *The nature of prejudice*. Oxford, England: Addison-Wesley.
- Arnett, J. J. (2005). The developmental context of substance use in emerging adulthood. *Journal of Drug Issues, 35*, 235-253.
- Asch, S. E. (1955). Opinions and social pressure. *Scientific American, 193*(5), 31-35.
- Asch, S. E. (1956). Studies of independence and conformity: I. A minority of one against a unanimous majority. *Psychological Monographs: General and Applied, 70*(9), 1-70.
- Baer, J. S. (1994). Effects of college residence on perceived norms for alcohol consumption: An examination of the first year in college. *Psychology of Addictive Behaviors, 8*(1), 43-50.
- Berkowitz, A. D. (2005). An overview of the social norms approach. In: L. C. Lederman and L. Stewart (Eds.), *Changing the culture of college drinking: A socially situated health communication campaign* (pp. 193-214). Cresskill, NJ: Hampton Press.
- Berkowitz, A. D., & Perkins, H. W. (1986). Problem drinking among college students: A review of recent research. *Journal of American College Health, 35*, 21-28.
- Borsari, B., & Carey, K. B. (2001). Peer influences on college drinking: A review of the research. *Journal of Substance Abuse, 13*, 391-424.
- Borsari, B., & Carey, K. B. (2003). Descriptive and injunctive norms in college drinking: A meta-analytic integration. *Journal of Studies on Alcohol, 64*(3), 331-341.
- Borsari, B., & Carey, K. B. (2006). How the quality of peer relationships influences college alcohol use. *Drug and Alcohol Review, 25*(4), 361-370.
- Centers for Disease Control and Prevention. (2012). Alcohol and public health fact sheet. Retrieved from <http://www.cdc.gov/alcohol/fact-sheets/binge-drinking.htm>
- Centola, D., Willer, R., & Macy, M. (2005). The emperor's dilemma: A computational model of self-enforcing norms. *American Journal of Sociology, 110*(4), 1009-1040.
- Chen, C. M., Dufour, M. C., & Yi, H. Y. (2004). Alcohol consumption among young adults ages 18-24 in the United States: Results from the 2001-2002 NESARC Survey. *Alcohol Research & Health*.
- Clements, R. (1999). Prevalence of alcohol-use disorders and alcohol-related problems in a college student sample. *College Health, 48*, 111-118.
- Core Institute. (2010). 2006-2008 national data: Core alcohol and drug survey long form – form 194. Retrieved from <http://www.core.siuc.edu/pdfs/report0608.pdf>

- DeJong, W., & Linkenbach, J. (1999). Telling it like it is. *The Higher Education Center for Alcohol and Other Drug Abuse and Violence Prevention*, 11-13.
- DeMartini, K. S., Carey, K. B., Lao, K., & Luciano, M. (2011). Injunctive norms for alcohol-related consequences and protective behavioral strategies: Effects of gender and year in school. *Addictive Behaviors*, 36(4), 347-353.
- Flowers, N. T., Naimi, T. S., Brewer, R. D., Elder, R. W., Shults, R. A., Jiles, R. (2008). Patterns of alcohol consumption and alcohol-impaired driving in the United States. *Alcoholism: Clinical and Experimental Research*, 32(4), 639-644.
- Haines, M. P. (1996). *A social norms approach to preventing binge drinking at colleges and universities*. Newton, MA: Higher Education Center for Alcohol and Other Drug Prevention.
- Haines, M., & Spear, S. F. (1996). Changing the perception of the norm: A strategy to decrease binge drinking among college students. *Journal of American College Health*, 45(3), 134-140.
- Hingson, R., Heeren, T., Winter, M., & Wechsler, H. (2005). Magnitude of alcohol-related mortality and morbidity among U.S. college students ages 18-24: Changes from 1998 to 2001. *Annual Review of Public Health*, 26, 259-257.
- Hingson, R. W., Zha, W., Weitzman, E. R. (2009). Magnitude of and trends in alcohol-related mortality and morbidity among U.S. college students ages 18-24, 1998-2005. *Journal of Studies on Alcohol*, 16, 12-20.
- Johnston, L. D., O'Malley, P. M., & Bachman, J. G. (2001). *Monitoring the future national survey results on drug use, 1975-2000. Vol. 11: College students and adults ages 19-40*. Bethesda, MD: National Institute on Drug Abuse.
- Kansas State University Counseling Services. (2011). Alcohol and other drug education service. Retrieved from <http://www.k-state.edu/counseling/student/alcohol.htm>
- Kenrick, D. T., Gutierres, S. E. (1980). Contrast effects and judgments of physical attractiveness: When beauty becomes a social problem. *Journal of Personality and Social Psychology*, 38(1), 131-140.
- Kunda, Z., & Oleson, K. C. (1995). Maintaining stereotypes in the face of disconfirmation: Constructing grounds for subtyping deviants. *Journal of Personality and Social Psychology*, 68(4), 565-580.
- Lewis, M. A., & Neighbors, C. (2004). Gender-specific misperceptions of college student drinking norms. *Psychology of Addictive Behaviors*, 18(4), 334-339.

- Lewis, M. A., & Neighbors, C. (2006a). Social norms approaches using descriptive drinking norms education: A review of the research on personalized normative feedback. *Journal of American College Health, 54*(4), 213-218.
- Lewis, M. A., & Neighbors, C. (2006b). Who is the typical college student? Implications for personalized normative feedback interventions. *Addictive Behaviors, 31*(11), 2120-2126.
- Maass, A., & Clark, R. D. (1984). Hidden impact of minorities: Fifteen years of minority influence research. *Psychological Bulletin, 95*(3), 428-450.
- Maney, D. W. (1990). Predicting university students' use of alcoholic beverages. *Journal of College Student Development, 31*, 23-32.
- McCabe, S. E. (2002). Gender differences in collegiate risk factors for heavy episodic drinking. *Journal of Studies on Alcohol, 63*(1), 49-56.
- Naimi, T. S., Brewer, R. D., Mokdad, A., Denny, C., Serdula, M. K., Marks, J. S. (2003). Binge drinking among US adults. *Journal of the American Medical Association, 289*(1), 70-75.
- National Institute of Alcohol Abuse and Alcoholism. (2004). NIAAA council approves definition of binge drinking. *NIAAA Newsletter 2004, 3*. Retrieved from http://pubs.niaaa.nih.gov/publications/Newsletter/winter2004/Newsletter_Number3.pdf
- O'Malley, P. M., & Johnston, L. D. (2002). Epidemiology of alcohol and other drug use among American college students. *Journal of Studies on Alcohol and Drugs, 14*, 23-39.
- Osgood, C. E., & Tannenbaum, P. H. (1955). The principle of congruity in the prediction of attitude change. *Psychological Review, 62*(1), 42-55.
- Perkins, H. W. (2003). The emergence and evolution of the social norms approach to substance abuse prevention. *The social norms approach to preventing school and college age substance abuse: A handbook for educators, counselors, and clinicians*, 3-18.
- Perkins, H. W., & Craig, D. W. (2006). A successful social norms campaign to reduce alcohol misuse among college student-athletes. *Journal of Studies on Alcohol, 67*, 880-889.
- Perkins, H. W., Haines, M. P., & Rice, R. (2005). Misperceiving the college drinking norm and related problems: A nationwide study of exposure to prevention information, perceived norms and student alcohol misuse. *Journal of Studies on Alcohol, 66*, 470-478.
- Petty, R. E., & Cacioppo, J. T. (1996). *Attitudes and persuasion: Classic and contemporary approaches*. Boulder, CO: Westview Press.
- Prentice, D. A., & Miller, D. T. (1993). Pluralistic ignorance and alcohol use on campus: Some consequences of misperceiving the social norm. *Journal of Personality and Social Psychology, 64*(2), 243-256.

- Schroeder, C. M., & Prentice, D. A. (1998). Exposing pluralistic ignorance to reduce alcohol use among college students. *Journal of Applied Social Psychology, 28*(23), 2150-2180.
- Shamir, J., & Shamir, M. (1997). Pluralistic ignorance across issues and over time: Information cues and biases. *The Public Opinion Quarterly, 61*(2), 227-260.
- Sherif, M. (1935). A study of some social factors in perception. *Archives of Psychology, 187*, 60.
- Slutske, W. S. (2005). Alcohol use disorders among US college students and their non-college-attending peers. *Archives of General Psychiatry, 62*, 321-327.
- Slutske, W. S., Hunt-Carter, E. E., Nabors-Oberg, R. E., Sher, K. J., Bucholz, K. K., Madden, P. A. F., Anokhin, A., & Heath, A. C. (2004). Do college students drink more than their non-college-attending peers? Evidence from a population-based longitudinal female twin study. *Journal of Abnormal Psychology, 113*(4), 530.
- Strahan, R., & Gerbasi, K. C. (1972). Short, homogeneous versions of the Marlow-Crowne Social Desirability Scale. *Journal of Clinical Psychology, 28*, 191-193.
- Suls, J., & Green, P. (2003). Pluralistic ignorance and college student perceptions of gender-specific alcohol norms. *Health Psychology, 22*(5), 479-486.
- Synnott, C. K. (2012). College students' misperceptions regarding their peers' feelings of comfort in drinking situations: A proactive intervention model. *International Journal of Humanities and Social Sciences, 2*(1), 94-104.
- Thombs, D. L., Dotterer, S., Olds, R. S., Sharp, K. E., & Raub, C. G. (2004). A close look at why one social norms campaign did not reduce student drinking. *Journal of American College Health, 53*(2), 61-68.
- Toroyan, T., & Peden, M. (2007). Youth and road safety. Retrieved from http://www.who.int/violence_injury_prevention/publications
- U.S. Department of Health and Human Services. (2010). 1 in 4 high school students and young adults report binge drinking: 60 percent of high school students who drink, binge drink. Retrieved from <http://www.cdc.gov/media/pressrel/2010/r101005.html>
- Wagenaar, A. C., Toomey, T. L., & Lenk, K. M. (2004). Environmental influence on young adult drinking. *Alcohol Research & Health, 28*(4), 230-235.
- Wechsler, H. W., Dowdall, G. W., Maenner, G., Gledhill-Hoyt, J., & Lee, H. (1998). Changes in binge drinking and related problems among American college students between 1993 and 1997. *Journal of American College Health, 47*(2), 57-68.

- Wechsler, H., Lee, J. E., Kuo, M., & Lee, H. (2000). College binge drinking in the 1990s: A continuing problem results of the Harvard School of Public Health 1999 College Alcohol Study. *Journal of American College Health, 48*(5), 199-210.
- Wechsler, H., Molnar, B. E., Davenport, A. E., & Baer, J. S. (1999). College alcohol use: A full or empty glass? *Journal of American College Health, 47*(6), 247-252.
- Wechsler, H., & Nelson, T. F. (2001). Binge drinking and the American college students: What's five drinks?. *Psychology of Addictive Behaviors, 15*(4), 287-291.
- Werch, C. E., Pappas, D. M., Carlson, J. M., DiClemente, C. C., Chally, P. S., & Sinder, J. A. (2000). Results of a social norm intervention to prevent binge drinking among first-year residential college students. *Journal of American College Health, 49*, 85-92.
- White, H. R., & Jackson, K. (2005). Social and psychological influences on emerging adult drinking behavior. *Alcohol Research and Health, 28*(4), 182-190.
- White, H. R., Labouvie, E. W., & Papadaratsakis, V. (2005). Changes in substance use during the transition to adulthood: A comparison of college students and their noncollege age peers. *Journal of Drug Issues, 35*(2), 281-305.
- World Health Organization (WHO). (2011). 10 facts on youth and road safety. Retrieved from http://www.who.int/features/factfiles/youth_roadsafety/en/

Appendix A - Pictures

Practice Picture 1



Practice Picture 2



Picture 1



Picture 2



Picture 3



Picture 4



Picture 5



Picture 6



Picture 7



Appendix D - Emotion Ratings

Please identify which emotions you think the identified person in the picture is experiencing based on the person's facial expression. *Do not take other people's facial expressions into account* – use only the identified person's facial expression to determine his/her present emotion.

Please circle as many emotions as you believe to fit the scenario.

Amused	Anxious	Bitter	Bored
Cheerful	Confident	Confused	Content
Depressed	Determined	Embarrassed	Excited
Frustrated	Guilty	Lonely	Preoccupied
Proud	Rejected	Satisfied	Uncomfortable

Appendix E - Suspicion

Were you suspicious of anything during the study?

No

Yes

If yes, please use the space provided below to explain what you were suspicious of:

Appendix F - Confederate Ratings

What do you think of the fact that the person interrupted / spoke up in the middle of the study?

1	2	3	4	5	6	7
Totally inappropriate						Totally appropriate

What was your impression of that person based upon the comment itself? Please answer on all of the below scales:

1	2	3	4	5	6	7
Not at all likeable						Very likeable

1	2	3	4	5	6	7
Bad impression						Good impression

1	2	3	4	5	6	7
Weak person						Strong person

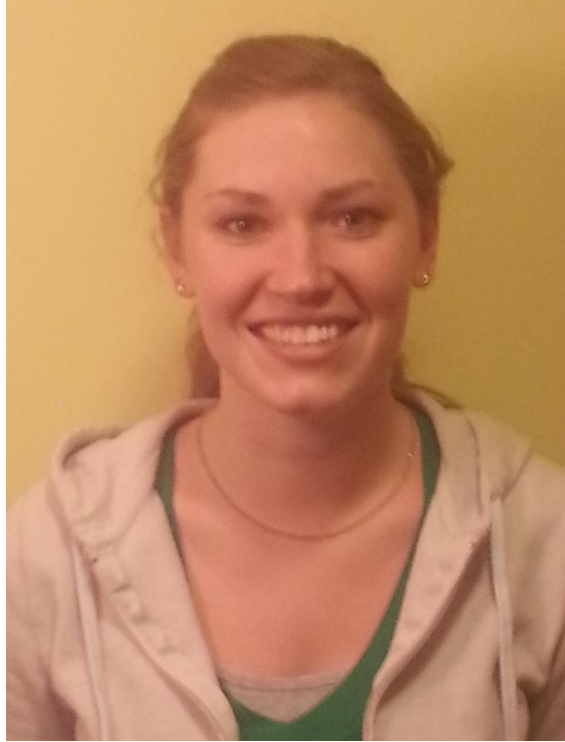
1	2	3	4	5	6	7
Bad person						Good person

Appendix G - Pretest Pictures

Male Confederate Picture



Female Confederate Picture



Appendix H - Pretest Confederate Ratings

Please rate your impression of the [male / female] in the below picture on each of the following scales:

1	2	3	4	5	6	7
Not at all likeable						Very likeable

1	2	3	4	5	6	7
Bad impression						Good impression

1	2	3	4	5	6	7
Weak person						Strong person

1	2	3	4	5	6	7
Bad person						Good person

Table 1 Means and standard deviations for the Participant sex x Confederate sex x Confederate comment Factorial Analysis of Variance on how common is drinking alcohol

Participant Sex	Condition (Confederate Sex x Confederate Comment)								
	Male Confederate			Female Confederate			Total		
	-	+	Total	-	+	Total	-	+	Total
Male Participant									
<i>M</i>	5.53	5.00	5.31	5.20	5.29	5.25	5.40	5.16	5.28
<i>SD</i>	0.92	1.00	0.97	0.79	0.73	0.74	0.87	0.85	0.86
<i>N</i>	15	11	26	10	14	24	25	25	50
Female Participant									
<i>M</i>	5.33	5.11	5.21	5.22	4.81	5.03	5.27	4.97	5.12
<i>SD</i>	0.82	0.94	0.88	1.17	1.05	1.11	1.01	0.99	1.00
<i>N</i>	15	19	34	18	16	34	33	35	68
Total									
<i>M</i>	5.43	5.07	5.25	5.21	5.03	5.12	5.33	5.05	5.19
<i>SD</i>	0.86	0.94	0.91	1.03	0.93	0.98	0.94	0.93	0.94
<i>N</i>	30	30	60	28	30	58	58	60	118

Note. How common is drinking alcohol is participants' responses to the question "How common is drinking alcohol among Kansas State undergraduate students?" on a scale from 0 (*not common at all*) to 6 (*is very common*).

Confederate Comment: The negative / criticizing (-) confederate comment regarding excessive drinking is “Who actually drinks that much?” The positive / endorsing (+) confederate comment regarding excessive drinking is “That looks like my kind of weekend!”

Table 2 Participant sex (P sex) x Confederate sex (C sex) x Confederate comment (Comment) Factorial Analysis of Variance on how common is drinking alcohol

Source	SS	df	MS	F
Participant Sex (P sex)	0.53	1	0.53	0.59
Confederate Sex (C sex)	0.36	1	0.36	0.40
Confederate Comment (Comment)	2.08	1	2.08	2.32
P sex * C sex	0.22	1	0.22	0.25
P sex * Comment	0.06	1	0.06	0.07
C sex * Comment	0.34	1	0.34	0.38
P sex * C sex * Comment	1.13	1	1.13	1.26
Error	98.86	110	0.90	
Total	3278.00	118		

* $p < .05$, ** $p < .01$, *** $p < .001$

Note. How common is drinking alcohol is participants' responses to the question "How common is drinking alcohol among Kansas State undergraduate students?" on a scale from 0 (*not common at all*) to 6 (*is very common*).

Confederate Comment: The negative / criticizing confederate comment regarding excessive drinking is "Who actually drinks that much?" The positive / endorsing confederate comment regarding excessive drinking is "That looks like my kind of weekend!"

Table 3 Means and standard deviations for the Participant sex x Confederate sex x Confederate comment x Sex norm perception repeated-measures Analysis of Variance on how often the average student drinks alcohol

Participant Sex	Condition (Confederate Sex x Confederate Comment)								
	Male Confederate			Female Confederate			Total		
	-	+	Total	-	+	Total	-	+	Total
Male Participant									
Male Norm Perception									
<i>M</i>	2.67	2.27	2.50	2.80	3.14	3.00	2.72	2.76	2.74
<i>SD</i>	1.29	0.65	1.07	1.03	1.17	1.10	1.17	1.05	1.10
Female Norm Perception									
<i>M</i>	2.07	1.64	1.88	2.40	2.50	2.46	2.20	2.12	2.16
<i>SD</i>	1.16	0.81	1.03	1.17	1.16	1.14	1.16	1.09	1.11
Total									
<i>M</i>	2.37	1.96	2.19	2.60	2.82	2.73	2.46	2.44	2.45
<i>SD</i>	1.23	0.73	1.05	1.10	1.17	1.12	1.17	1.07	1.11
<i>N</i>	15	11	26	10	14	24	25	25	50

Table 3 (*continued*)

Participant Sex	Condition (Confederate Sex x Confederate Comment)								
	Male Confederate			Female Confederate			Total		
	-	+	Total	-	+	Total	-	+	Total
Female Participant									
Male Norm Perception									
<i>M</i>	3.20	2.89	3.03	3.17	2.63	2.91	3.18	2.77	2.97
<i>SD</i>	1.15	0.94	1.03	1.04	0.96	1.03	1.07	0.94	1.02
Female Norm Perception									
<i>M</i>	2.53	2.05	2.26	2.28	2.00	2.15	2.39	2.03	2.21
<i>SD</i>	1.51	0.85	1.19	0.96	0.97	0.96	1.22	0.89	1.07
Total									
<i>M</i>	2.87	2.47	2.65	2.73	2.32	2.53	2.79	2.40	2.59
<i>SD</i>	1.33	0.90	1.11	1.00	0.97	1.00	1.15	0.92	1.05
<i>N</i>	15	19	34	18	16	34	33	35	68

Table 3 (continued)

Participant Sex	Condition (Confederate Sex x Confederate Comment)								
	Male Confederate			Female Confederate			Total		
	-	+	Total	-	+	Total	-	+	Total
Total									
Male Norm Perception									
<i>M</i>	2.93	2.67	2.80	3.04	2.87	2.95	2.98	2.77	2.87
<i>SD</i>	1.23	0.88	1.07	1.04	1.07	1.05	1.13	0.98	1.06
Female Norm Perception									
<i>M</i>	2.30	1.90	2.10	2.32	2.23	2.28	2.31	2.07	2.19
<i>SD</i>	1.34	0.85	1.13	1.02	1.07	1.04	1.19	0.97	1.09
Total									
<i>M</i>	2.62	2.29	2.45	2.68	2.55	2.62	2.65	2.42	2.53
<i>SD</i>	1.29	0.87	1.10	1.03	1.07	1.05	1.16	0.98	1.08
<i>N</i>	30	30	60	28	30	58	58	60	118

Note. How often the average student drinks alcohol is participants' responses to the question "How often do you think the average [male / female] undergraduate student at Kansas State drinks alcohol?" with possible responses ranging from 0 (< 1 time a week) to 7 (7 times a week).

Confederate Comment: The negative / criticizing (-) confederate comment regarding excessive drinking is “Who actually drinks that much?” The positive / endorsing (+) confederate comment regarding excessive drinking is “That looks like my kind of weekend!”

Due to the sex perception ratings being a within-subject variable, the *Ns* for the male participants, female participants, and total participants applies to the respective participant sex’s male norm perception, female norm perception, and total norm perception.

Table 4 Participant sex (P sex) x Confederate sex (C sex) x Confederate comment (Comment) x Sex norm perception (Sex norm) repeated-measures Analysis of Variance on how often the average student drinks alcohol

Source	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>
Within-Subjects Contrasts				
Sex norm	24.82	1	24.82	74.64 ***
Sex norm * P sex	0.49	1	0.49	1.47
Sex norm * C sex	0.03	1	0.03	0.09
Sex norm * Comment	0.03	1	0.03	0.10
Sex norm * P sex * C sex	0.04	1	0.04	0.11
Sex norm * P sex * Comment	0.12	1	0.12	0.36
Sex norm * C sex * Comment	0.05	1	0.05	0.14
P sex * C sex * Comment * Sex norm	0.37	1	0.37	1.12
Error	36.57	110	0.33	

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 4 (*continued*)

Source	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>
Between-Subjects Contrasts				
P sex	1.41	1	1.41	0.73
C sex	2.23	1	2.23	1.14
Comment	3.49	1	3.49	1.79
P sex * C sex	6.98	1	6.98	3.58
P sex * Comment	1.32	1	1.32	0.68
C sex * Comment	1.34	1	1.34	0.69
P sex * C sex * Comment	1.49	1	1.49	0.77
Error	214.37	110	1.95	

* $p < .05$, ** $p < .01$, *** $p < .001$

Note. How often the average student drinks alcohol is participants' responses to the question "How often do you think the average [male / female] undergraduate student at Kansas State drinks alcohol?" with possible responses ranging from 0 (< 1 time a week) to 7 (7 times a week).

Confederate Comment: The negative / criticizing confederate comment regarding excessive drinking is "Who actually drinks that much?" The positive / endorsing confederate comment regarding excessive drinking is "That looks like my kind of weekend!"

Table 5 Means and standard deviations for the Participant sex x Confederate sex x Confederate comment x Sex norm perception repeated-measures Analysis of Variance on how many hours the average student drinks alcohol

Participant Sex	Condition (Confederate Sex x Confederate Comment)								
	Male Confederate			Female Confederate			Total		
	-	+	Total	-	+	Total	-	+	Total
Male Participant									
Male Norm Perception									
<i>M</i>	3.27	3.09	3.19	3.00	3.43	3.25	3.16	3.28	3.22
<i>SD</i>	1.39	1.22	1.30	0.47	1.28	1.03	1.11	1.24	1.17
Female Norm Perception									
<i>M</i>	2.53	2.91	2.69	2.70	2.93	2.83	2.60	2.92	2.76
<i>SD</i>	1.06	1.30	1.16	0.68	1.14	0.96	0.91	1.19	1.06
Total									
<i>M</i>	2.90	3.00	2.94	2.85	3.18	3.04	2.88	3.10	2.99
<i>SD</i>	1.23	1.26	1.23	0.58	1.21	1.00	1.01	1.22	1.12
<i>N</i>	15	11	26	10	14	24	25	25	50

Table 5 (*continued*)

Participant Sex	Condition (Confederate Sex x Confederate Comment)								
	Male Confederate			Female Confederate			Total		
	-	+	Total	-	+	Total	-	+	Total
Female Participant									
Male Norm Perception									
<i>M</i>	3.80	4.00	3.91	4.11	4.00	4.06	3.97	4.00	3.99
<i>SD</i>	1.15	0.94	1.03	1.41	1.32	1.35	1.29	1.11	1.19
Female Norm Perception									
<i>M</i>	3.53	3.42	3.47	3.39	3.13	3.26	3.45	3.29	3.37
<i>SD</i>	0.99	1.02	0.99	1.24	1.15	1.19	1.12	1.07	1.09
Total									
<i>M</i>	3.67	3.71	3.69	3.75	3.57	3.66	3.71	3.65	3.68
<i>SD</i>	1.07	0.98	1.01	1.33	1.24	1.27	1.21	1.09	1.14
<i>N</i>	15	19	34	18	16	34	33	35	68

Table 5 (*continued*)

Participant Sex	Condition (Confederate Sex x Confederate Comment)								
	Male Confederate			Female Confederate			Total		
	-	+	Total	-	+	Total	-	+	Total
Total									
Male Norm Perception									
<i>M</i>	3.53	3.67	3.60	3.71	3.73	3.72	3.62	3.70	3.66
<i>SD</i>	1.28	1.12	1.20	1.27	1.31	1.28	1.27	1.21	1.24
Female Norm Perception									
<i>M</i>	3.03	3.23	3.13	3.14	3.03	3.09	3.09	3.13	3.11
<i>SD</i>	1.13	1.14	1.13	1.11	1.13	1.11	1.11	1.13	1.12
Total									
<i>M</i>	3.28	3.45	3.37	3.43	3.38	3.41	3.36	3.42	3.39
<i>SD</i>	1.21	1.13	1.17	1.19	1.22	1.20	1.19	1.17	1.18
<i>N</i>	30	30	60	28	30	58	58	60	118

Note. How many hours the average student drinks alcohol is participants' responses to the question "When the average [male / female] undergraduate student at Kansas State drinks alcohol, how many hours do you think that [he / she] spends drinking (at one time)?" with possible responses ranging from 0 (< 1 hour) to 6 (6 + hours).

Confederate Comment: The negative / criticizing (-) confederate comment regarding excessive drinking is “Who actually drinks that much?” The positive / endorsing (+) confederate comment regarding excessive drinking is “That looks like my kind of weekend!”

Due to the sex perception ratings being a within-subject variable, the *Ns* for the male participants, female participants, and total participants applies to the respective participant sex’s male norm perception, female norm perception, and total norm perception.

Table 6 Participant sex (P sex) x Confederate sex (C sex) x Confederate comment (Comment) x Sex norm perception (Sex norm) repeated-measures Analysis of Variance on how many hours the average student drinks alcohol

Source	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>
Within-Subjects Contrasts				
Sex norm	15.26	1	15.26	48.60***
Sex norm * P sex	0.47	1	0.47	1.49
Sex norm * C sex	0.36	1	0.36	1.14
Sex norm * Comment	0.01	1	0.01	0.04
Sex norm * P sex * C sex	0.66	1	0.66	2.11
Sex norm * P sex * Comment	0.59	1	0.59	1.87
Sex norm * C sex * Comment	0.31	1	0.31	0.99
P sex * C sex * Comment * Sex norm	0.73	1	0.73	2.33
Error	34.55	110	0.31	

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 6 (continued)

Source	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>
Between-Subjects Contrasts				
P sex	26.92	1	26.92	11.53**
C sex	0.01	1	0.01	0.01
Comment	0.29	1	0.29	0.12
P sex * C sex	0.13	1	0.13	0.06
P sex * Comment	1.16	1	1.16	0.50
C sex * Comment	0.00	1	0.00	0.00
P sex * C sex * Comment	0.75	1	0.75	0.32
Error	256.97	110	2.34	

* $p < .05$, ** $p < .01$, *** $p < .001$

Note. How many hours the average student drinks alcohol is participants' responses to the question "When the average [male / female] undergraduate student at Kansas State drinks alcohol, how many hours do you think that [he / she] spends drinking (at one time)?" with possible responses ranging from 0 (< 1 hour) to 6 (6 + hours).

Confederate Comment: The negative / criticizing confederate comment regarding excessive drinking is "Who actually drinks that much?" The positive / endorsing confederate comment regarding excessive drinking is "That looks like my kind of weekend!"

Table 7 Means and standard deviations for the Participant sex x Confederate sex x Confederate comment x Sex norm perception repeated-measures Analysis of Variance on how many drinks the average student drinks

Participant Sex	Condition (Confederate Sex x Confederate Comment)								
	Male Confederate			Female Confederate			Total		
	-	+	Total	-	+	Total	-	+	Total
Male Participant									
Male Norm Perception									
<i>M</i>	4.93	4.82	4.88	5.20	5.14	5.17	5.04	5.00	5.02
<i>SD</i>	1.34	0.75	1.11	0.79	1.03	0.92	1.14	0.91	1.02
Female Norm Perception									
<i>M</i>	3.40	3.27	3.35	4.20	4.00	4.08	3.72	3.68	3.70
<i>SD</i>	1.40	1.35	1.36	0.92	1.30	1.14	1.28	1.35	1.30
Total									
<i>M</i>	4.17	4.05	4.12	4.70	4.57	4.63	4.38	4.34	4.36
<i>SD</i>	1.37	1.05	1.24	0.86	1.17	1.03	1.21	1.13	1.16
<i>N</i>	15	11	26	10	14	24	25	25	50

Table 7 (continued)

Participant Sex	Condition (Confederate Sex x Confederate Comment)								
	Male Confederate			Female Confederate			Total		
	-	+	Total	-	+	Total	-	+	Total
Female Participant									
Male Norm Perception									
<i>M</i>	5.13	5.53	5.35	5.44	5.19	5.32	5.30	5.37	5.34
<i>SD</i>	0.99	0.61	0.81	0.92	0.98	0.95	0.95	0.81	0.87
Female Norm Perception									
<i>M</i>	4.13	4.05	4.09	4.22	3.94	4.09	4.18	4.00	4.09
<i>SD</i>	1.25	1.22	1.22	1.31	1.18	1.24	1.26	1.19	1.22
Total									
<i>M</i>	4.63	4.79	4.72	4.83	4.57	4.71	4.74	4.69	4.72
<i>SD</i>	1.12	0.92	1.02	1.12	1.08	1.10	1.11	1.00	1.05
<i>N</i>	15	19	34	18	16	34	33	35	68

Table 7 (continued)

Participant Sex	Condition (Confederate Sex x Confederate Comment)								
	Male Confederate			Female Confederate			Total		
	-	+	Total	-	+	Total	-	+	Total
Total									
Male Norm Perception									
<i>M</i>	5.03	5.27	5.15	5.36	5.17	5.26	5.19	5.22	5.20
<i>SD</i>	1.16	0.74	0.97	0.87	0.99	0.93	1.03	0.87	0.95
Female Norm Perception									
<i>M</i>	3.77	3.77	3.77	4.21	3.97	4.09	3.98	3.87	3.92
<i>SD</i>	1.36	1.31	1.32	1.17	1.22	1.19	1.28	1.26	1.26
Total									
<i>M</i>	4.40	4.52	4.46	4.79	4.57	4.68	4.59	4.55	4.56
<i>SD</i>	1.26	1.03	1.15	1.02	1.11	1.06	1.16	1.07	1.11
<i>N</i>	30	30	60	28	30	58	58	60	118

Note. How many drinks the average student drinks is participants' responses to the question "Within the amount of time you previously indicated that the average [male / female] undergraduate student at Kansas State drinks alcohol, how many drinks do you think [he / she] consumes?" with possible responses ranging from 0 (0 drinks) to 6 (6 + drinks).

Confederate Comment: The negative / criticizing (-) confederate comment regarding excessive drinking is “Who actually drinks that much?” The positive / endorsing (+) confederate comment regarding excessive drinking is “That looks like my kind of weekend!”

Due to the sex perception ratings being a within-subject variable, the *Ns* for the male participants, female participants, and total participants applies to the respective participant sex’s male norm perception, female norm perception, and total norm perception.

Table 8 Participant sex (P sex) x Confederate sex (C sex) x Confederate comment (Comment) x Sex norm perception (Sex norm) repeated-measures Analysis of Variance on how many drinks the average student drinks

Source	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>
Within-Subjects Contrasts				
Sex norm	91.27	1	91.27	230.73***
Sex norm * P sex	0.07	1	0.07	0.17
Sex norm * C sex	0.78	1	0.78	1.96
Sex norm * Comment	0.38	1	0.38	0.96
Sex norm * P sex * C sex	0.77	1	0.77	1.95
Sex norm * P sex * Comment	0.11	1	0.11	0.27
Sex norm * C sex * Comment	0.09	1	0.09	0.22
P sex * C sex * Comment * Sex norm	0.29	1	0.29	0.74
Error	43.51	110	0.40	

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 8 (continued)

Source	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>
Between-Subjects Contrasts				
P sex	6.29	1	6.29	3.01
C sex	3.76	1	3.76	1.80
Comment	0.47	1	0.47	0.23
P sex * C sex	4.17	1	4.17	1.99
P sex * Comment	0.06	1	0.06	0.03
C sex * Comment	0.67	1	0.67	0.32
P sex * C sex * Comment	0.62	1	0.62	0.30
Error	229.84	110	2.09	

* $p < .05$, ** $p < .01$, *** $p < .001$

Note. How many drinks the average student drinks is participants' responses to the question "Within the amount of time you previously indicated that the average [male / female] undergraduate student at Kansas State drinks alcohol, how many drinks do you think [he / she] consumes?" with possible responses ranging from 0 (0 drinks) to 6 (6 + drinks).

Confederate Comment: The negative / criticizing confederate comment regarding excessive drinking is "Who actually drinks that much?" The positive / endorsing confederate comment regarding excessive drinking is "That looks like my kind of weekend!"

Table 9 Means and standard deviations for the Participant sex x Confederate sex x Confederate comment x Sex norm perception repeated-measures Analysis of Variance on how much the average student enjoys drinking alcohol

Participant Sex	Condition (Confederate Sex x Confederate Comment)								
	Male Confederate			Female Confederate			Total		
	-	+	Total	-	+	Total	-	+	Total
Male Participant									
Male Norm Perception									
<i>M</i>	5.00	5.18	5.08	5.30	5.07	5.17	5.12	5.12	5.12
<i>SD</i>	0.85	0.41	0.69	0.68	1.00	0.87	0.78	0.78	0.77
Female Norm Perception									
<i>M</i>	4.53	4.73	4.62	5.20	4.64	4.88	4.80	4.68	4.74
<i>SD</i>	1.06	0.47	0.85	0.79	1.01	0.95	1.00	0.80	0.90
Total									
<i>M</i>	4.77	4.96	4.85	5.25	4.86	5.03	4.96	4.90	4.93
<i>SD</i>	0.96	0.44	0.77	0.74	1.01	0.91	0.89	0.79	0.84
<i>N</i>	15	11	26	10	14	24	25	25	50

Table 9 (*continued*)

Participant Sex	Condition (Confederate Sex x Confederate Comment)								
	Male Confederate			Female Confederate			Total		
	-	+	Total	-	+	Total	-	+	Total
Female Participant									
Male Norm Perception									
<i>M</i>	5.33	5.16	5.24	5.33	5.19	5.26	5.33	5.17	5.25
<i>SD</i>	0.62	0.96	0.82	0.84	0.66	0.75	0.74	0.82	0.78
Female Norm Perception									
<i>M</i>	4.87	4.53	4.68	5.00	4.63	4.82	4.94	4.57	4.75
<i>SD</i>	0.74	1.02	0.91	0.97	0.96	0.97	0.86	0.98	0.94
Total									
<i>M</i>	5.10	4.85	4.96	5.17	4.91	5.04	5.14	4.87	5.00
<i>SD</i>	0.68	0.99	0.87	0.91	0.81	0.86	0.80	0.90	0.86
<i>N</i>	15	19	34	18	16	34	33	35	68

Table 9 (continued)

Participant Sex	Condition (Confederate Sex x Confederate Comment)								
	Male Confederate			Female Confederate			Total		
	-	+	Total	-	+	Total	-	+	Total
Total									
Male Norm Perception									
<i>M</i>	5.17	5.17	5.17	5.32	5.13	5.22	5.24	5.15	5.19
<i>SD</i>	0.75	0.79	0.76	0.77	0.82	0.80	0.76	0.80	0.78
Female Norm Perception									
<i>M</i>	4.70	4.60	4.65	5.07	4.63	4.84	4.88	4.62	4.75
<i>SD</i>	0.92	0.86	0.88	0.90	0.96	0.95	0.92	0.90	0.92
Total									
<i>M</i>	4.94	4.89	4.91	5.20	4.88	5.03	5.06	4.89	4.97
<i>SD</i>	0.84	0.83	0.82	0.84	0.89	0.88	0.84	0.85	0.85
<i>N</i>	30	30	60	28	30	58	58	60	118

Note. How much the average student enjoys drinking alcohol is participants' responses to the question "How much do you think the average [male / female] undergraduate student at Kansas State enjoys drinking alcohol?" on a scale from 0 (*does not enjoy at all*) to 6 (*enjoys very much*).

Confederate Comment: The negative / criticizing (-) confederate comment regarding excessive drinking is “Who actually drinks that much?” The positive / endorsing (+) confederate comment regarding excessive drinking is “That looks like my kind of weekend!”

Due to the sex perception ratings being a within-subject variable, the *Ns* for the male participants, female participants, and total participants applies to the respective participant sex’s male norm perception, female norm perception, and total norm perception.

Table 10 Participant sex (P sex) x Confederate sex (C sex) x Confederate comment (Comment) x Sex norm perception (Sex norm) repeated-measures Analysis of Variance on how much the average student enjoys drinking alcohol

Source	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>
Within-Subjects Contrasts				
Sex norm	10.47	1	10.47	49.14****
Sex norm * P sex	0.26	1	0.26	1.23
Sex norm * C sex	0.31	1	0.31	1.47
Sex norm * Comment	0.45	1	0.45	2.09
Sex norm * P sex * C sex	0.03	1	0.03	0.15
Sex norm * P sex * Comment	0.01	1	0.01	0.03
Sex norm * C sex * Comment	0.15	1	0.15	0.68
P sex * C sex * Comment * Sex norm	0.07	1	0.07	0.32
Error	23.44	110	0.21	

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 10 (*continued*)

Source	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>
Between-Subjects Contrasts				
P sex	0.12	1	0.12	0.10
C sex	0.94	1	0.94	0.75
Comment	1.85	1	1.85	1.47
P sex * C sex	0.23	1	0.23	0.18
P sex * Comment	0.35	1	0.35	0.28
C sex * Comment	1.20	1	1.20	0.95
P sex * C sex * Comment	1.18	1	1.18	0.94
Error	138.47	110	1.26	

* $p < .05$, ** $p < .01$, *** $p < .001$

Note. How much the average student enjoys drinking alcohol is participants' responses to the question "How much do you think the average [male / female] undergraduate student at Kansas State enjoys drinking alcohol?" on a scale from 0 (*does not enjoy at all*) to 6 (*enjoys very much*).

Confederate Comment: The negative / criticizing confederate comment regarding excessive drinking is "Who actually drinks that much?" The positive / endorsing confederate comment regarding excessive drinking is "That looks like my kind of weekend!"

Table 11 Means and standard deviations for the Participant sex x Confederate sex x Confederate comment x Sex norm perception repeated-measures Analysis of Variance on general norm drinking behavior

Participant Sex	Condition (Confederate Sex x Confederate Comment)								
	Male Confederate			Female Confederate			Total		
	-	+	Total	-	+	Total	-	+	Total
Male Participant									
Male Norm Perception									
<i>M</i>	3.97	3.84	3.90	4.08	4.20	4.15	4.01	4.04	4.03
<i>SD</i>	1.02	0.59	0.85	0.50	0.79	0.67	0.84	0.72	0.77
Female Norm Perception									
<i>M</i>	3.13	3.14	3.13	3.63	3.52	3.56	3.33	3.35	3.34
<i>SD</i>	0.92	0.74	0.83	0.73	0.86	0.79	0.87	0.82	0.83
Total									
<i>M</i>	3.55	3.49	3.52	3.86	3.86	3.86	3.67	3.70	3.69
<i>SD</i>	0.97	0.67	0.84	0.62	0.83	0.73	0.86	0.77	0.80
<i>N</i>	15	11	26	10	14	24	25	25	50

Table 11 (*continued*)

Participant Sex	Condition (Confederate Sex x Confederate Comment)								
	Male Confederate			Female Confederate			Total		
	-	+	Total	-	+	Total	-	+	Total
Female Participant									
Male Norm Perception									
<i>M</i>	4.37	4.40	4.38	4.51	4.25	4.39	4.45	4.33	4.39
<i>SD</i>	0.66	0.61	0.62	0.73	0.65	0.70	0.69	0.62	0.66
Female Norm Perception									
<i>M</i>	3.77	3.51	3.63	3.72	3.42	3.58	3.74	3.47	3.60
<i>SD</i>	0.88	0.75	0.81	0.91	0.82	0.87	0.89	0.77	0.83
Total									
<i>M</i>	4.07	3.96	4.01	4.12	3.84	3.99	4.10	3.90	4.00
<i>SD</i>	0.77	0.68	0.72	0.82	0.74	0.79	0.79	0.70	0.75
<i>N</i>	15	19	34	18	16	34	33	35	68

Table 11 (*continued*)

Participant Sex	Condition (Confederate Sex x Confederate Comment)								
	Male Confederate			Female Confederate			Total		
	-	+	Total	-	+	Total	-	+	Total
Total									
Male Norm Perception									
<i>M</i>	4.17	4.19	4.18	4.36	4.23	4.29	4.26	4.21	4.23
<i>SD</i>	0.87	0.65	0.76	0.68	0.71	0.69	0.78	0.67	0.73
Female Norm Perception									
<i>M</i>	3.45	3.38	3.41	3.69	3.47	3.57	3.57	3.42	3.49
<i>SD</i>	0.94	0.75	0.85	0.84	0.82	0.83	0.89	0.79	0.84
Total									
<i>M</i>	3.81	3.79	3.80	4.03	3.85	3.93	3.92	3.82	3.86
<i>SD</i>	0.91	0.70	0.81	0.76	0.77	0.76	0.84	0.73	0.79
<i>N</i>	30	30	60	28	30	58	58	60	118

Note. General norm drinking behavior is the mean of responses to four items used to rate participants' perception of each sex's norm drinking behavior: "How often do you think the average [male / female] undergraduate student at Kansas State drinks alcohol?" (0 [*< 1 times a week*] to 7 [*7 times a week*]); "When the average [male / female] undergraduate student at Kansas

State drinks alcohol, how many hours do you think that [he / she] spends drinking (at one time)?” (0 [*< 1 hour*] to 6 [*6 + hours*]); “Within the amount of time you previously indicated that the average [male / female] undergraduate student at Kansas State drinks alcohol, how many drinks do you think [he / she] consumes?” (0 [*0 drinks*] to 6 [*6 + drinks*]); “How much do you think the average [male / female] undergraduate student at Kansas State enjoys drinking alcohol?” (0 [*does not enjoy at all*] to 6 [*enjoys very much*]). Thus, the general norm drinking behavior composite variable ranges in possible responses from 0 to 6.25.

Confederate Comment: The negative / criticizing (-) confederate comment regarding excessive drinking is “Who actually drinks that much?” The positive / endorsing (+) confederate comment regarding excessive drinking is “That looks like my kind of weekend!”

Due to the sex perception ratings being a within-subject variable, the *Ns* for the male participants, female participants, and total participants applies to the respective participant sex’s male norm perception, female norm perception, and total norm perception.

Table 12 Participant sex (P sex) x Confederate sex (C sex) x Confederate comment (Comment) x Sex norm perception (Sex norm) repeated-measures Analysis of Variance on general norm drinking behavior

Source	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>
Within-Subjects Contrasts				
Sex norm	29.37	1	29.37	211.11***
Sex norm * P sex	0.17	1	0.17	1.20
Sex norm * C sex	0.07	1	0.07	0.47
Sex norm * Comment	0.15	1	0.15	1.11
Sex norm * P sex * C sex	0.27	1	0.27	1.90
Sex norm * P sex * Comment	0.04	1	0.04	0.30
Sex norm * C sex * Comment	0.01	1	0.01	0.08
P sex * C sex * Comment * Sex norm	0.32	1	0.32	2.30
Error	15.30	110	0.14	

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 12 (*continued*)

Source	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>
Between-Subjects Contrasts				
P sex	5.33	1	5.33	4.97*
C sex	1.28	1	1.28	1.19
Comment	0.71	1	0.71	0.66
P sex * C sex	1.91	1	1.91	1.78
P sex * Comment	0.41	1	0.41	0.38
C sex * Comment	0.04	1	0.04	0.03
P sex * C sex * Comment	0.20	1	0.20	0.19
Error	118.01	110	1.07	

* $p < .05$, ** $p < .01$, *** $p < .001$

Note. General norm drinking behavior is the mean of responses to four items used to rate participants' perception of each sex's norm drinking behavior: "How often do you think the average [male / female] undergraduate student at Kansas State drinks alcohol?" (0 [*< 1 times a week*] to 7 [*7 times a week*]); "When the average [male / female] undergraduate student at Kansas State drinks alcohol, how many hours do you think that [he / she] spends drinking (at one time)?" (0 [*< 1 hour*] to 6 [*6 + hours*]); "Within the amount of time you previously indicated that the average [male / female] undergraduate student at Kansas State drinks alcohol, how many drinks do you think [he / she] consumes?" (0 [*0 drinks*] to 6 [*6 + drinks*]); "How much do you think the average [male / female] undergraduate student at Kansas State enjoys drinking alcohol?" (0

[*does not enjoy at all*] to 6 [*enjoys very much*]). Thus, the general norm drinking behavior composite variable ranges in possible responses from 0 to 6.25.

Confederate Comment: The negative / criticizing confederate comment regarding excessive drinking is “Who actually drinks that much?” The positive / endorsing confederate comment regarding excessive drinking is “That looks like my kind of weekend!”

Table 13 Means and standard deviations for the Participant sex x Confederate sex x Confederate comment Factorial Analysis of Variance on confederate comment appropriateness

Participant Sex	Condition (Confederate Sex x Confederate Comment)								
	Male Confederate			Female Confederate			Total		
	-	+	Total	-	+	Total	-	+	Total
Male Participant									
<i>M</i>	3.07	2.82	2.96	3.50	3.07	3.25	3.24	2.96	3.10
<i>SD</i>	1.44	0.98	1.25	1.08	1.39	1.26	1.30	1.21	1.25
<i>N</i>	15	11	26	10	14	24	25	25	50
Female Participant									
<i>M</i>	2.60	2.00	2.26	2.94	2.88	2.91	2.79	2.40	2.59
<i>SD</i>	1.24	1.00	1.14	1.55	1.71	1.60	1.41	1.42	1.42
<i>N</i>	15	19	34	18	16	34	33	35	68
Total									
<i>M</i>	2.83	2.30	2.57	3.14	2.97	3.05	2.98	2.63	2.81
<i>SD</i>	1.34	1.06	1.23	1.41	1.54	1.47	1.37	1.35	1.37
<i>N</i>	30	30	60	28	30	58	58	60	118

Note. Confederate comment appropriateness is participants' responses to the question "What do you think of the fact that the person interrupted / spoke up in the middle of the study?" on a scale from 1 (*totally inappropriate*) to 7 (*totally appropriate*).

Confederate Comment: The negative / criticizing (-) confederate comment regarding excessive drinking is "Who actually drinks that much?" The positive / endorsing (+) confederate comment regarding excessive drinking is "That looks like my kind of weekend!"

Table 14 Participant sex (P sex) x Confederate sex (C sex) x Confederate comment (Comment) Factorial Analysis of Variance on confederate comment appropriateness

Source	SS	df	MS	F
Participant Sex (P sex)	7.33	1	7.33	4.06*
Confederate Sex (C sex)	6.42	1	6.42	3.56
Confederate Comment (Comment)	3.20	1	3.20	1.78
P sex * C sex	0.00	1	0.00	0.00
P sex * Comment	0.50	1	0.50	0.28
C sex * Comment	0.22	1	0.22	0.12
P sex * C sex * Comment	0.89	1	0.89	0.50
Error	198.29	110	1.80	
Total	1147.00	118		

* $p < .05$, ** $p < .01$, *** $p < .001$

Note. Confederate comment appropriateness is participants' responses to the question "What do you think of the fact that the person interrupted / spoke up in the middle of the study?" on a scale from 1 (*totally inappropriate*) to 7 (*totally appropriate*).

Confederate Comment: The negative / criticizing confederate comment regarding excessive drinking is "Who actually drinks that much?" The positive / endorsing confederate comment regarding excessive drinking is "That looks like my kind of weekend!"

Table 15 Means and standard deviations for the Participant sex x Confederate sex x Confederate comment Factorial Analysis of Variance on confederate likeableness

Participant Sex	Condition (Confederate Sex x Confederate Comment)								
	Male Confederate			Female Confederate			Total		
	-	+	Total	-	+	Total	-	+	Total
Male Participant									
<i>M</i>	3.53	3.45	3.50	3.90	3.43	3.63	3.68	3.44	3.56
<i>SD</i>	0.99	1.21	1.07	1.29	1.02	1.14	1.11	1.08	1.09
<i>N</i>	15	11	26	10	14	24	25	25	50
Female Participant									
<i>M</i>	4.27	3.32	3.74	3.89	3.50	3.71	4.06	3.40	3.72
<i>SD</i>	0.88	1.11	1.11	0.96	1.59	1.29	0.93	1.33	1.20
<i>N</i>	15	19	34	18	16	34	33	35	68
Total									
<i>M</i>	3.90	3.37	3.63	3.89	3.47	3.67	3.90	3.42	3.65
<i>SD</i>	1.00	1.13	1.09	1.07	1.33	1.22	1.02	1.23	1.15
<i>N</i>	30	30	60	28	30	58	58	60	118

Note. Confederate likeableness is participants' rating of how likeable the confederates were on a scale from 1 (*not at all likeable*) to 7 (*very likeable*).

Confederate Comment: The negative / criticizing (-) confederate comment regarding excessive drinking is “Who actually drinks that much?” The positive / endorsing (+) confederate comment regarding excessive drinking is “That looks like my kind of weekend!”

Table 16 Participant sex (P sex) x Confederate sex (C sex) x Confederate comment (Comment) Factorial Analysis of Variance on confederate likeableness

Source	SS	df	MS	F
Participant Sex (P sex)	0.76	1	0.76	0.58
Confederate Sex (C sex)	0.04	1	0.04	0.03
Confederate Comment (Comment)	6.31	1	6.31	4.83*
P sex * C sex	0.50	1	0.50	0.39
P sex * Comment	1.10	1	1.10	0.84
C sex * Comment	0.05	1	0.05	0.04
P sex * C sex * Comment	1.61	1	1.61	1.23
Error	143.61	110	1.31	
Total	1729.00	118		

* $p < .05$, ** $p < .01$, *** $p < .001$

Note. Confederate likeableness is participants' rating of how likeable the confederates were on a scale from 1 (*not at all likeable*) to 7 (*very likeable*).

Confederate Comment: The negative / criticizing confederate comment regarding excessive drinking is "Who actually drinks that much?" The positive / endorsing confederate comment regarding excessive drinking is "That looks like my kind of weekend!"

Table 17 Means and standard deviations for the Participant sex x Confederate sex x Confederate comment Factorial Analysis of Variance on bad / good impression of confederate

Participant Sex	Condition (Confederate Sex x Confederate Comment)								
	Male Confederate			Female Confederate			Total		
	-	+	Total	-	+	Total	-	+	Total
Male Participant									
<i>M</i>	3.33	2.55	3.00	3.70	3.00	3.29	3.48	2.80	3.14
<i>SD</i>	0.90	0.82	0.94	1.16	1.11	1.16	1.01	1.00	1.05
<i>N</i>	15	11	26	10	14	24	25	25	50
Female Participant									
<i>M</i>	3.27	2.32	2.74	3.44	2.81	3.15	3.36	2.54	2.94
<i>SD</i>	0.88	1.16	1.14	1.20	1.60	1.42	1.01	1.38	1.29
<i>N</i>	15	19	34	18	16	34	33	35	68
Total									
<i>M</i>	3.30	2.40	2.85	3.54	2.90	3.21	3.41	2.65	3.03
<i>SD</i>	0.88	1.04	1.06	1.17	1.37	1.31	1.03	1.23	1.19
<i>N</i>	30	30	60	28	30	58	58	60	118

Note. Bad / good impression of confederate is participants' rating of how good or bad of an impression the participants had of the confederates on a scale from 1 (*bad impression*) to 7 (*good impression*).

Confederate Comment: The negative / criticizing (-) confederate comment regarding excessive drinking is "Who actually drinks that much?" The positive / endorsing (+) confederate comment regarding excessive drinking is "That looks like my kind of weekend!"

Table 18 Participant sex (P sex) x Confederate sex (C sex) x Confederate comment (Comment) Factorial Analysis of Variance on bad / good impression of confederate

Source	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>
Participant Sex (P sex)	0.97	1	0.97	0.73
Confederate Sex (C sex)	3.95	1	3.95	3.02
Confederate Comment (Comment)	16.65	1	16.65	12.71**
P sex * C sex	0.04	1	0.04	0.03
P sex * Comment	0.02	1	0.02	0.01
C sex * Comment	0.29	1	0.29	0.22
P sex * C sex * Comment	0.09	1	0.09	0.07
Error	144.08	110	1.31	
Total	1247.00	118		

* $p < .05$, ** $p < .01$, *** $p < .001$

Note. Bad / good impression of confederate is participants' rating of how good or bad of an impression the participants had of the confederates on a scale from 1 (*bad impression*) to 7 (*good impression*).

Confederate Comment: The negative / criticizing confederate comment regarding excessive drinking is “Who actually drinks that much?” The positive / endorsing confederate comment regarding excessive drinking is “That looks like my kind of weekend!”

Table 19 Means and standard deviations for the Participant sex x Confederate sex x Confederate comment Factorial Analysis of Variance on impression of confederate as a weak / strong person

Participant Sex	Condition (Confederate Sex x Confederate Comment)								
	Male Confederate			Female Confederate			Total		
	-	+	Total	-	+	Total	-	+	Total
Male Participant									
<i>M</i>	4.13	3.55	3.88	4.00	3.71	3.83	4.08	3.64	3.86
<i>SD</i>	0.92	1.04	0.99	0.94	0.99	0.96	0.91	1.00	0.97
<i>N</i>	15	11	26	10	14	24	25	25	50
Female Participant									
<i>M</i>	4.40	4.26	4.32	4.56	4.06	4.32	4.48	4.17	4.32
<i>SD</i>	0.99	1.10	1.04	0.98	1.00	1.01	0.97	1.04	1.01
<i>N</i>	15	19	34	18	16	34	33	35	68
Total									
<i>M</i>	4.27	4.00	4.13	4.36	3.90	4.12	4.31	3.95	4.13
<i>SD</i>	0.94	1.11	1.03	1.00	1.00	1.01	0.96	1.05	1.02
<i>N</i>	30	30	60	28	30	58	58	60	118

Note. Impression of confederate as a weak / strong person is participants' rating of their impressions of how weak or strong the confederates were on a scale from 1 (*weak person*) to 7 (*strong person*).

Confederate Comment: The negative / criticizing (-) confederate comment regarding excessive drinking is "Who actually drinks that much?" The positive / endorsing (+) confederate comment regarding excessive drinking is "That looks like my kind of weekend!"

Table 20 Participant sex (P sex) x Confederate sex (C sex) x Confederate comment (Comment) Factorial Analysis of Variance on impression of confederate as a weak / strong person

Source	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>
Participant Sex (P sex)	6.30	1	6.30	6.30*
Confederate Sex (C sex)	0.00	1	0.00	0.00
Confederate Comment (Comment)	3.99	1	3.99	3.99*
P sex * C sex	0.01	1	0.01	0.01
P sex * Comment	0.11	1	0.11	0.11
C sex * Comment	0.01	1	0.01	0.01
P sex * C sex * Comment	0.77	1	0.77	0.77
Error	109.98	110	1.00	
Total	2131.00	118		

* $p < .05$, ** $p < .01$, *** $p < .001$

Note. Impression of confederate as a weak / strong person is participants' rating of their impressions of how weak or strong the confederates were on a scale from 1 (*weak person*) to 7 (*strong person*).

Confederate Comment: The negative / criticizing confederate comment regarding excessive drinking is "Who actually drinks that much?" The positive / endorsing confederate comment regarding excessive drinking is "That looks like my kind of weekend!"

Table 21 Means and standard deviations for the Participant sex x Confederate sex x Confederate comment Factorial Analysis of Variance on impression of confederate as a bad / good person

Participant Sex	Condition (Confederate Sex x Confederate Comment)								
	Male Confederate			Female Confederate			Total		
	-	+	Total	-	+	Total	-	+	Total
Male Participant									
<i>M</i>	4.27	3.82	4.08	4.40	3.86	4.08	4.32	3.84	4.08
<i>SD</i>	1.16	0.60	0.98	0.70	0.66	0.72	0.99	0.62	0.85
<i>N</i>	15	11	26	10	14	24	25	25	50
Female Participant									
<i>M</i>	4.27	3.89	4.06	4.61	4.19	4.41	4.45	4.03	4.24
<i>SD</i>	0.70	0.74	0.74	0.85	0.54	0.74	0.79	0.66	0.76
<i>N</i>	15	19	34	18	16	34	33	35	68
Total									
<i>M</i>	4.27	3.87	4.07	4.54	4.03	4.28	4.40	3.95	4.17
<i>SD</i>	0.94	0.68	0.84	0.79	0.62	0.74	0.88	0.65	0.80
<i>N</i>	30	30	60	28	30	58	58	60	118

Note. Impression of confederate as a bad / good person is participants' rating of their impressions of how bad or good the confederates were on a scale from 1 (*bad person*) to 7 (*good person*).

Confederate Comment: The negative / criticizing (-) confederate comment regarding excessive drinking is “Who actually drinks that much?” The positive / endorsing (+) confederate comment regarding excessive drinking is “That looks like my kind of weekend!”

Table 22 Participant sex (P sex) x Confederate sex (C sex) x Confederate comment (Comment) Factorial Analysis of Variance on impression of confederate as a bad / good person

Source	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>
Participant Sex (P sex)	0.67	1	0.67	1.12
Confederate Sex (C sex)	1.16	1	1.16	1.93
Confederate Comment (Comment)	5.64	1	5.64	9.38**
P sex * C sex	0.38	1	0.38	0.64
P sex * Comment	0.07	1	0.07	0.11
C sex * Comment	0.04	1	0.04	0.06
P sex * C sex * Comment	0.00	1	0.00	0.01
Error	66.12	110	0.60	
Total	2126.00	118		

* $p < .05$, ** $p < .01$, *** $p < .001$

Note. Impression of confederate as a bad / good person is participants' rating of their impressions of how bad or good the confederates were on a scale from 1 (*bad person*) to 7 (*good person*).

Confederate Comment: The negative / criticizing confederate comment regarding excessive drinking is "Who actually drinks that much?" The positive / endorsing confederate comment regarding excessive drinking is "That looks like my kind of weekend!"

Table 23 Means and standard deviations for the Participant sex x Confederate sex x Confederate comment Factorial Analysis of Variance on general confederate rating

Participant Sex	Condition (Confederate Sex x Confederate Comment)								
	Male Confederate			Female Confederate			Total		
	-	+	Total	-	+	Total	-	+	Total
Male Participant									
<i>M</i>	3.82	3.34	3.62	4.00	3.50	3.71	3.89	3.43	3.66
<i>SD</i>	0.75	0.64	0.73	0.73	0.79	0.79	0.73	0.72	0.75
<i>N</i>	15	11	26	10	14	24	25	25	50
Female Participant									
<i>M</i>	4.05	3.45	3.71	4.13	3.64	3.90	4.09	3.54	3.81
<i>SD</i>	0.66	0.74	0.76	0.53	1.07	0.85	0.59	0.90	0.81
<i>N</i>	15	19	34	18	16	34	33	35	68
Total									
<i>M</i>	3.93	3.41	3.67	4.08	3.58	3.82	4.00	3.49	3.74
<i>SD</i>	0.71	0.69	0.74	0.60	0.94	0.82	0.65	0.82	0.78
<i>N</i>	30	30	60	28	30	58	58	60	118

Note. General confederate rating is the mean of responses to four items used to rate participants' perception of the confederates': likeableness (1 [*not at all likeable*] to 7 [*very likeable*]); bad /

good impression (1 [*bad impression*] to 7 [*good impression*]); weak / strong person (1 [*weak person*] to 7 [*strong person*]); and bad / good person (1 [*bad person*] to 7 [*good person*]).

Confederate Comment: The negative / criticizing (-) confederate comment regarding excessive drinking is “Who actually drinks that much?” The positive / endorsing (+) confederate comment regarding excessive drinking is “That looks like my kind of weekend!”

Table 24 Participant sex (P sex) x Confederate sex (C sex) x Confederate comment (Comment) Factorial Analysis of Variance on general confederate rating

Source	SS	df	MS	F
Participant Sex (P sex)	0.65	1	0.65	1.14
Confederate Sex (C sex)	0.66	1	0.66	1.16
Confederate Comment (Comment)	7.51	1	7.51	13.18***
P sex * C sex	0.01	1	0.01	0.02
P sex * Comment	0.02	1	0.02	0.04
C sex * Comment	0.02	1	0.02	0.03
P sex * C sex * Comment	0.04	1	0.04	0.06
Error	62.72	110	0.57	
Total	1725.69	118		

* $p < .05$, ** $p < .01$, *** $p < .001$

Note. General confederate rating is the mean of responses to four items used to rate participants' perception of the confederates': likeableness (1 [*not at all likeable*] to 7 [*very likeable*]); bad / good impression (1 [*bad impression*] to 7 [*good impression*]); weak / strong person (1 [*weak person*] to 7 [*strong person*]); and bad / good person (1 [*bad person*] to 7 [*good person*]).

Confederate Comment: The negative / criticizing confederate comment regarding excessive drinking is "Who actually drinks that much?" The positive / endorsing confederate comment regarding excessive drinking is "That looks like my kind of weekend!"