

12-2010

A Social Norms Approach to College Alcohol Use: Drinking in a Low-Use Environment

Jared M. Cox
Utah State University

Follow this and additional works at: <https://digitalcommons.usu.edu/etd>

 Part of the [Psychology Commons](#)

Recommended Citation

Cox, Jared M., "A Social Norms Approach to College Alcohol Use: Drinking in a Low-Use Environment" (2010). *All Graduate Theses and Dissertations*. 828.

<https://digitalcommons.usu.edu/etd/828>

This Dissertation is brought to you for free and open access by the Graduate Studies at DigitalCommons@USU. It has been accepted for inclusion in All Graduate Theses and Dissertations by an authorized administrator of DigitalCommons@USU. For more information, please contact dylan.burns@usu.edu.



A SOCIAL NORMS APPROACH TO COLLEGE ALCOHOL USE:
DRINKING IN A LOW-USE ENVIRONMENT

by

Jared M. Cox

A dissertation submitted in partial fulfillment
of the requirements for the degree

of

DOCTOR OF PHILOSOPHY

in

Psychology

Approved:

Scott C. Bates, Ph.D.
Major Professor

David M. Stein, Ph.D.
Committee Member

M. Scott DeBerard, Ph.D.
Committee Member

Susan L. Crowley, Ph.D.
Committee Member

Julie Gast, Ph.D.
Committee Member

Byron R. Burnham, Ed.D.
Dean of Graduate Studies

UTAH STATE UNIVERSITY
Logan, Utah

2010

Copyright © Jared M. Cox 2010

All Rights Reserved

ABSTRACT

A Social Norms Approach to College Alcohol Use:

Drinking in a Low-Use Environment

by

Jared M. Cox, Doctor of Philosophy

Utah State University, 2010

Major Professor: Dr. Scott C. Bates
Department: Psychology

Social norms interventions have been shown to be effective in reducing problematic alcohol use on college campuses. However, not all interventions have been successful, and the campus environment may be responsible for the variable reactions that students have to these interventions. Three articles were written to investigate the nature and utility of social norms interventions in an environment where alcohol use is relatively low. The first article details an online social norms intervention implemented on a low-use campus. Results suggest that if adapted to the campus culture, a social norms approach to reducing alcohol use could be successful in this unique environment. The second article investigates the impact of social norms in the form of censoring alcohol use. Using the theory of reasoned action, the study shows how alcohol use differs for those exposed to different types of norms, and how attitude toward being censured may change whether exposure to a particular social norm is indicative of decreased alcohol use. The third article is a process evaluation of the social norms intervention in a

unique environment. It reviews difficulties encountered in implementing an intervention as well as recommendations for future online approaches to intervention implementation.

(124 pages)

ACKNOWLEDGMENTS

I would like to thank my wife, children, and parents for all of their support. I would also like to express my gratitude to my major professor, Dr. Scott Bates, from whom I learned more about research and psychology than a silly acknowledgment in the front of a dissertation that no one will read can adequately express.

Jared M. Cox

CONTENTS

	Page
ABSTRACT.....	iii
ACKNOWLEDGMENTS	v
LIST OF TABLES	ix
LIST OF FIGURES	viii
CHAPTER	
1. SOCIAL NORMS AND ALCOHOL USE	1
2. A SOCIAL NORMS APPROACH TO DECREASING COLLEGE STUDENT ALCOHOL USE IN A LOW-USE ENVIRONMENT	6
Abstract	6
Introduction	7
Normative Influences in Context	16
Methods	19
Results	24
Discussion	31
3. CENSURING, SOCIAL NORMS, AND COLLEGE STUDENT ALCOHOL USE	38
Abstract	38
Introduction	39
The Current Study	47
Methods	48
Results	51
Discussion	57
4. A PROCESS EVALUATION OF AN ONLINE SOCIAL NORMS INTERVENTION	64
Abstract	64
Introduction	64
Background	65
Summary of Intervention	68

	Page
Difficulties in Intervention Implementation	73
Summary and Conclusions	84
Recommendations	86
5. SUMMARY AND CONCLUSIONS	89
REFERENCES	92
APPENDICES	103
Appendix A: Presented Normative Information	104
Appendix B: Censure Items	106
Appendix C: Sample Email Invitations	108
CURRICULUM VITAE	111

LIST OF TABLES

Table		Page
2.1	Demographic Information for Respondents Who Reported Any Alcohol Use in the Past Year, by Condition.....	20
2.2	Means and Standard Deviations of Weekly Alcohol Use for Those Who Reported Alcohol Use Below the Normative Quantity Prior to the Intervention.....	27
2.3	Quantity of Alcohol Use in Drinks per Week, by Condition and Time.....	27
2.4	Means and Standard Deviations of per-Week Instances of Problematic Alcohol Use for the Sample and for Those Who Reported Problematic Use, by Condition.....	27
3.1	Mean Number of Drinks Consumed Weekly by Type of Censure Experienced and Referent Group.....	51
4.1	Timeline of Intervention, Including Response Rates.....	71

LIST OF FIGURES

Figure		Page
2.1	Perceived and reported use of alcohol from Time 1 to Time 2.....	27
2.2	Perceived and reported use for those who responded during all three data collection points.....	28
2.3	Instances of problematic drinking from Time 1 to Time 2, and with all three data collection points.....	30
3.1	The theory of reasoned action.....	44

CHAPTER 1

SOCIAL NORMS AND ALCOHOL USE

The deleterious effects of problematic alcohol use on college campuses have been well studied. While there is evidence that those who drink to excess in college are not more likely to develop alcohol-related disorders in the future (Sher, Barthlow, & Nanda, 2001), the more immediate consequences of problematic use are very concerning. Problematic alcohol use is related to poor academic performance, increased likelihood of dropping out of college, and legal problems. Additionally, the problematic use of alcohol is related to more severe consequences including increased probability of being raped and a higher mortality rate (Hingson, Heeren, Winter, & Wechsler, 2005; Kaysen, Neighbors, Martell, Fossos, & Larimer, 2006).

Intervention efforts are abundant throughout campuses in the United States (Wechsler et al., 2002). Social norms approaches emerged as one approach to effectively decrease problematic alcohol use (see Perkins & Berkowitz, 1986). This approach assumes that students tend to overestimate the number of drinks the average student, or similar students consume when drinking (i.e., the descriptive norm). This overestimation increases the likelihood that a student will attempt to “drink-up” to this inflated perceived norm. By deflating this perceived norm to the actual average number of drinks consumed per drinking occasion by other students (when this is a healthy quantity), students are less likely to drink to excess. Intervention efforts focus on gauging perceived quantity of alcohol use by others, accurately measuring the normative quantity of alcohol actually used, then effectively and efficiently dispersing this normative data. If the normative information is delivered in an effective manner and is well received by the

targeted student population, these accurate perceptions of quantity of use should mediate decreases in actual alcohol use.

In addition to overestimating the actual quantities of alcohol that others consume, students tend to overestimate the extents to which other students believe that heavy alcohol use is appropriate (i.e., the injunctive norm). Perceptions that others believe heavy use to be appropriate may convince a student that he or she ought to drink in this problematic fashion. By correctly measuring the degree to which students believe that heavy drinking is appropriate and conveying this true norm, students may be more inclined to consume alcohol in a less problematic manner.

In order to effectively distribute normative data, social norms approaches have taken many forms, and these forms have led to interventions that vary in effectiveness. Initially, mass media campaigns were popular. These interventions utilized posters, radio and television broadcasts, public raffles, and other forms of media to convey the average number of alcoholic drinks that the average student consumed while drinking (see Agostinelli & Grube, 2002). While there is some evidence of their effectiveness (Agostinelli, Brown, & Miller, 1995), some studies found that they had little-to-no effect on college student alcohol use (Thombs, Dotterer, Olds, Sharp, & Raub, 2004; Werch et al., 2000). Adjustments to mass media approaches have been made and current approaches emphasize the need to convey believable norms in a personalized manner (Lewis & Neighbors, 2006).

Lewis, Neighbors, Oster-Aaland, Kirkeby, and Larimer, (2007) found that personalizing the normative message to the individual was an important element. Their

study targeted incoming high-risk freshmen and followed these students three months after the personalized normative feedback was delivered. Their findings suggested that a personalized style is effective in reducing the number of days per week students drink as well as reducing the number of drinks consumed per week.

Schroeder and Prentice (1998) found that by targeting students' perceptions of others' beliefs about the appropriateness of heavy drinking, problematic alcohol use by students decreased. The researchers found that students tend to overestimate the extent to which other students find excessive drinking appropriate. By reducing the perceived appropriateness of heavy drinking and conveying this combined social normative information, student alcohol use was decreased. A well-controlled meta-analysis of the social norms literature on alcohol use bolstered this finding, showing that injunctive norms approaches appear to be an effective component in social norms interventions (Borsari & Carey, 2003).

Even with these effective components to social norms interventions there are still barriers to effective intervention implementation. Campus culture has been shown to be one of these barriers that must be accounted for in order to intervene effectively. Rimal and Real (2003) found that some students harbored rebellious feelings toward alcohol use and therefore social norms approaches were less effective. Thombs and colleagues (2007) found that some students view heavy drinking as a source of pride and therefore are encouraged to drink to excess in the face of social norms information. Cox and Bates (in press) found significant negative relationships between perceptions of other students' alcohol use and personal use on a campus where alcohol use is relatively rare. As perceptions of "the average student's" use decreased, alcohol use increased. These

findings suggest that if the campus culture is not accounted for, an intervention may be ineffective or may produce paradoxical effects and actually increase alcohol use.

The following three articles investigate various aspects of a social norms intervention in an environment where alcohol use is low. Because of this unique environment, more traditional approaches to social norms interventions are not expected to be effective (Cox & Bates, in press). The first article reviews the implementation of an online social norms intervention in this low-use environment. It provides a description of the intervention including how the intervention was tailored to fit the campus' culture and focuses on how an online approach to social norm intervention could be effective, and discusses possible improvements that could be made to better implement social norms interventions using online means. The intervention measured alcohol use prior to the social norms intervention, nine weeks postintervention, and 18 weeks postintervention.

The second article examines the use of censuring as a specific strategy for conveying social norms information. Censuring is viewed as giving a description of what is appropriate (e.g., "you should drink less") and as conveying a sense of overall appropriateness of drinking (e.g., "I don't approve of your drinking"). The study investigates the manner in which censuring an individual for alcohol use conveys a social norms message and how that message might differ dependent upon whether the message conveys a descriptive norm (e.g., stop drinking) or an injunctive norm (e.g., I do not approve of your drinking). Additionally, the attitude of the person censured is taken into consideration to determine whether descriptive or injunctive approaches differ in their effects on a person who states that he or she is not receptive to censure for alcohol use.

The third article is a process evaluation of the online intervention. Due to the unique nature of this intervention, stemming not only from the culture in which it was conducted, but in the way that it was implemented, an evaluation of those facets that went well and those parts that are in need of improvement was warranted. The process evaluation identified four key areas wherein modifications in intervention implementation may have improved the intervention. It is believed that these changes would increase student participation, improve tracking of partial responses, and would elucidate the effects that a tragic alcohol-related death had on student alcohol use. Suggested improvements for each of these areas are included along with research to support the suggested changes.

CHAPTER 2

A SOCIAL NORMS APPROACH TO DECREASING COLLEGE
STUDENT ALCOHOL USE IN A LOW-USE ENVIRONMENT

Abstract

In an effort to reduce the deleterious effects of problematic alcohol use on college campuses, social norms interventions to reducing alcohol use have emerged as effective approaches. These interventions work by correcting overestimations of relevant others' alcohol use. When realistic perceptions replace the previously held inflated perceptions of others' alcohol use, students are less likely to drink to excess. The current study recruited 1,061 students through email invitations to participate in an intervention delivered online. The results show that 9-weeks postintervention, significant decreases in alcohol use were found for both the experimental and control conditions. At the 18-week follow-up period no significant differences in alcohol use were found by condition. Further analysis suggests that while both conditions reduced their use of alcohol, those in the experimental condition maintained their drinking at the decreased rate, while those in the control condition began increasing their use toward preintervention quantities. Similar results were found for those reporting instances of heavy drinking.

Introduction

The problematic use of alcohol by college students is a point of concern for many institutions of higher learning (Wechsler et al., 2002). Singleton (2007) found that after controlling for background factors (e.g., socioeconomic status; SES) alcohol use showed a significant negative relationship with academic performance. Furthermore, in a study on alcohol use, legal infractions, and student retention, Thompson (2007) found that those who experienced multiple arrests for alcohol-related offenses were less likely to remain in college. It should also be noted that the negative consequences for college students extend beyond academic difficulties. Kaysen and colleagues (2006) found that female students who drank excessively were more likely to be raped than were their moderate drinking counterparts. Finally, there appears to be an increase in alcohol-related mortality among college students. Hingson and colleagues (2005) estimated that in 2001 approximately 1,300 college students died following vehicular accidents that involved alcohol. This number of deaths indicated a 7% increase in alcohol-related vehicular mortality rates from just three years prior. Hingson and colleagues also estimated a slight increase in alcohol related nonvehicular mortality rates for college students for this same time period.

In an effort to attenuate the many negative consequences of problematic alcohol use, colleges and universities have implemented a number of programs to reduce problematic drinking by students. The programs implemented by institutions vary in type and efficacy in reducing student alcohol use. Among these interventions, social norms approaches have shown promise in reducing student alcohol use (Borsari & Carey, 2000; Collins, Carey, & Sliwinski, 2002; Mattern & Neighbors, 2004). Social norms research

suggests that students tend to overestimate the amount of alcohol that other students consume (Baer, Stacy, & Larimer, 1991). In addition, students tend to overestimate the extent to which other students endorse excessive alcohol use as being acceptable. Interventions that provide accurate normative data, thereby correcting these misperceptions, appear to effectively decrease problematic alcohol use (Agostinelli et al., 1995; Baer, Kivlahan, Blume, McKnight, & Marlatt, 2001).

However, not all social norms interventions have been found to be effective. Some interventions failed to change perceptions of the normative amount of alcohol use by others (Granfield, 2002; Thombs et al., 2004), and therefore did not show a decrease in alcohol use. Other interventions showed increases in alcohol use by students (Clapp, Lange, Russel, Shilington, & Voas, 2003; Thombs & Hamilton, 2002). A close evaluation of successful programs provides insight into the components necessary for a successful social norms intervention. Effective program components include: adequate exposure to the normative information (Gomberg, Schneider, & DeJong, 2001; Perkins, Haines, & Rice, 2005); the presentation of different types of normative information (Borsari & Carey, 2001; Chawla, Neighbors, Lewis, Lee, & Larimer, 2007); and, the presentation of normative data in a personally relevant manner (Kypri et al., 2004; Lewis & Neighbors, 2006).

Presenting multiple types of normative information may increase the effectiveness of interventions. In a meta analysis, Borsari and Carey (2003) found strong relationships between two types of normative influences and reported personal alcohol use. First, elevated perceptions of quantities and frequencies of use by others (descriptive norms) were indicative of elevated personal use. Second, elevated perceptions that problematic

use of alcohol was accepted by others (injunctive norms) were indicative of elevated personal use.

Descriptive Normative Influences

Two types of social norms are commonly referenced in the social norms literature: descriptive norms and injunctive norms (Cialdini & Trost, 1998). Descriptive norms are derived from what others do in a given situation, especially when the proper course of action is ambiguous. By observing others' behaviors we can derive information on what is the normal thing to do (Cialdini, Reno, & Kallgren, 1990).

Interventions for excessive alcohol use that fail to accurately account for descriptive normative messages may have serious consequences. Cialdini (2003) implicated the lack of insight into how social norms work to the failures of some alcohol prevention programs. Thombs (2000) attributed failure to account for the manner in which social norms work to the consistently poor outcome findings of the Drug Abuse Resistance Education (DARE) program. These types of prevention campaigns promote the perception that problematic alcohol use is so frequent as to justify intense attempts to control it. This indirectly suggests that the descriptive norm is much higher than it truly is and may encourage rather than discourage alcohol use (Cialdini & Trost, 1998).

Lack of consideration for the manner in which descriptive social norms influence people was cited in the failure of The National Youth Anti-Drug Media Campaign sponsored by the National Institute on Drug Abuse (NIDA). The \$1 billion project attempted to persuade younger children and teenagers to avoid drug use. However, an evaluation of the program (Hornik et al., 2003) suggested that the program actually had paradoxical effects and, in fact, appears to have influenced its target population to

commence or increase drug use at a higher rate than would have been expected without the program. Jacobsohn (2007) investigated the reasons for the failure of The National Youth Anti-Drug Media Campaign. Findings suggest that a failure to account for descriptive norms was a major factor in the programs downfall. Specifically, highlighting drug use through the intensive campaign served to introduce the perception that drug use was much more ubiquitous than it truly was. This increase in the perceived descriptive norm then served to fuel the increase in drug use that was recorded by those evaluating the program. The targeted audience derived what the normal course of action was from the intervention (use of drugs) and behaved accordingly.

Injunctive Normative Influence

Injunctive norms describe what is deemed appropriate for a situation, or the course of action that should be taken in a given situation. For example, in formal dining environments, excessive alcohol use is often frowned upon, and therefore may be less likely to occur. However, at a New Year's Eve fraternity party, excessive alcohol use may be seen as appropriate for the environment. In both of these situations, an actual normative amount (e.g., "two drinks are usually consumed here") is not communicated; rather appropriateness of drinking style is conveyed. In addition, these norms have the ability to not only prescribe behaviors by stating what behaviors are considered appropriate, but can proscribe unacceptable behaviors as well (Cialdini & Trost, 1998).

One of the strengths of injunctive normative messages is that they can be combined with descriptive normative messages in order to avoid the paradoxical effects that descriptive normative messages can have. Schultz, Nolan, Cialdini, Goldstein, and Griskevicius (2007) exposed a group of Californian homeowners to either descriptive

norms about conservative energy use, or a combination of descriptive and injunctive norms about conservative energy use. The experimenters found that households from both conditions that were consuming energy amounts above the normative amount decreased the amount of energy they consumed after exposure to the normative information. However, in the descriptive norms only group, those households that were consuming less than the normative amount tended to increase the amount of energy they consumed, effectively attempting to live up to the norm. In the descriptive plus injunctive norm group, those households that were using less than the normative amount did not increase the amount of energy consumed. By adding the injunctive norm that their decreased use was appropriate, the paradoxical effects of descriptive norms were not realized.

By adding a component similar to that used by Schultz and colleagues (2007) those who drink less than the normative amount may not be influenced to increase their use of alcohol. This injunctive norms approach to intervention would have to be applied to one that is personalized and so it could not be applied to the massive multimedia campaigns as they have traditionally been used. Using a personalized approach an injunctive norm could be conveyed in a manner that mimics the use by Cialdini and colleagues by placing a smiley or frowny face (or other indication of approval/disapproval) next to the descriptive norm dependent upon whether or not the person reported consumption at a level that was higher or lower than the normative amount.

Personalization of Normative Information

The mere communication of a norm may not effectively influence changes in behavior. Festinger (1954) suggested that personal relevance of communicated normative

information is needed before compliance with the norm is expected. For example, if exposed to the norms (descriptive or injunctive) of a different culture that are not meaningful because of cultural differences, a change in behavior is not likely. Festinger makes this point abundantly clear in his theory of social comparison. Festinger postulated that when faced with a decision that has no clear objective means for determining the acceptable course of action, a person will look for social cues in the environment. In doing so, persons for comparison will be sought out that appear to be similar. As Festinger stated, “a college student, for example, does not compare himself to inmates of an institution for the feeble minded to evaluate his own intelligence” (1954, p. 120).

The increased influence of personally relevant information has been illustrated in multiple studies that investigated alcohol use on college campuses (Lewis & Neighbors, 2006). Tampke (1990), for instance, found significant differences in the amounts of alcohol consumed by those who belonged to intact groups that would be likely to look within the group for normative information on alcohol use. Fraternity members showed a tendency to look within their own group to determine the normative amount of alcohol use and showed the highest use. Thus an intervention for fraternity members would be less likely to succeed if the normative group used for comparison was “the average student on campus.”

Borsari and Carey (2000) conducted a randomized control trial of a social norms intervention with a small group of students from an introductory psychology course. Students in the experimental group reviewed the personal alcohol use for the previous month and then compared this to both campus and national norms. Those in the experimental group reduced their perceptions of use by others by 6.37 drinks per week,

and decreased their reported use of alcohol by 6.17 drinks per week. Differences between the experimental group and the control group were significant for reductions in alcohol use. Thus, using a personalized approach, the intervention was able to decrease the use of alcohol by students.

Neighbors, Larimer, and Lewis (2004) completed a similar experiment that presented participants normative information using computers. The researchers recruited students from undergraduate psychology courses who reported at least one instance of heavy drinking during the past 30 days. Students were assigned to experimental and control groups and completed a computer-based baseline assessment and follow-up occurred at 3 and 6 months. Those in the experimental groups then were shown comparisons of their perceptions of use by other along with actual use as well as their reported quantity of consumption with college norms. At the 3 month follow-up the experimental group reported a significantly greater decrease in alcohol use from baseline (3.41 drinks per week decrease) compared to the control group (1.46 drinks per week decrease). At the 6-month follow-up, those in the experimental group again reported a significant decrease in use (3.21 weekly drink decrease from baseline) compared to the control group (0.90 weekly drink decrease from baseline).

By including personalized data as has been used in previous studies (see Larimer et al., 2001; Stamper, Smith, Gant, & Bogle, 2004) and including a component similar to that used by Rogers, Kuiper, and Kirker (1977) to increase the self-reference of the data, an intervention may be able to enhance the effects of a social norm intervention by better ensuring that the data is available for processing when it is needed, such as a party or other drinking occasion.

Computer Based Interventions

Relatively few researchers have taken advantage of the internet in order to communicate healthy normative information regarding the use of alcohol by students. However, results from the few studies that have used computer-based interventions show promise. Neighbors, Lewis, Bergstrom, and Larimer (2006) recruited students who reported at least one heavy drinking episode in the previous month to participate in an online social norms intervention. Students were randomly assigned to either the control group (assessment only) or the experimental group (assessment and exposure to normative information). Students completed the assessments and interventions in a laboratory setting that offered privacy to the individual. In addition to providing descriptive normative information, the intervention included a personalization component. Students were given comparisons of their own alcohol use with that of “the average student on the campus.” The control group reported a decrease in quantity of weekly alcohol use by 1.28 drinks. Those in the experimental group reported a statistically significant greater reduction in quantity of 3.6 drinks per week. Neighbors and colleagues’ (2006) computer-based intervention was able to effectively decrease quantities of alcohol use compared to the control group.

By using computer-based means for conveying the normative message, those implementing social norms interventions can better account for effective communication. Similar to the massive multimedia campaigns, information can be distributed to an entire campus. Unlike the multimedia campaigns this information can be tracked to ensure proper saturation of the campus. Whereas a given student’s basic exposure to a massive multimedia campaign may be uncertain, with the use of online means of conveying the

message, there is greater confidence that a student who has completed an online intervention has received basic exposure to the normative information. Additionally, because a more interactive environment can exist online, these interventions have the ability to better ensure that the normative message is understood. By using techniques that increase the likelihood that a student participating in the intervention will understand and remember the normative information, an online intervention could increase understanding of the normative message. In addition to relaying information effectively, this information can also readily be made personally relevant to the individual student. Similar to the techniques used in small groups, a direct comparison of a student's reported information (e.g., perceived number of drinks per week consumed by others) can be compared to the actual norm (e.g., the actual number of drinks per week reported by the targeted group). The interactive nature of online means also has the added benefit of offering the needed injunctive component. This component, which is often not included in interventions, has not been used in any of the published studies that used online or computer-based means to communicate normative information. Because of the more interactive environment that can exist online, injunctive norms could be presented in many different fashions. Similar to the study by Steffian (1999) a direct comparison could be made between perceived level of appropriateness that others hold toward alcohol use and reported appropriateness as actually reported by others. Additionally, this type of normative information could be conveyed in a manner more similar to the study by Schultz and colleagues (2007). When the person reports consuming alcohol at a rate lower than the normative amount a symbol of approval (e.g., a simple smiley face) could appear, serving to reinforce the more healthy behavior. When the opposite occurs, a

symbol of disapproval (e.g., frowny face) could appear on the screen next to the comparison.

Normative Influences in Context

In order to effectively implement a social norms intervention, the unique culture of the campus needs to be considered (Wechsler, Lee, Gledhill-Hoyt, & Nelson, 2001). This point was made by Perkins and Berkowitz (1986) in their initial study on the relationship between perceived normative use of alcohol and reported use by others. The researchers found a relationship between perceived use of alcohol and reported use only when they accounted for personal attitudes toward alcohol use. The authors presented scenarios where a single approach to decreasing alcohol use on the campus would have beneficial effects for one group but disastrous effects for another. The solution was to ensure that the culture was taken into consideration then presenting an individual with the type of intervention that would be of most benefit. Since that time additional research on the many differences in how alcohol use varies by population has emerged.

In a study on differences in use by religion and geographical location Engs, Hanson, Gliksman, and Smythe (1990) found that there were differences in alcohol use by students that were reliably predicted by the country (United States or Canada) of residence. American students were more likely to drink greater amounts overall. When individual religions were examined, an important discrepancy was found for those who belonged to religions that proscribed the use of alcohol. Students from Canada consumed significantly more drinks per week (approximately 12 drinks) than did their counterparts in the United States (approximately 8 drinks). Thus normative influences for a population

may be influenced by factors such as religion, but the manner in which the religious tenets then influence the style of alcohol use may be modified by geography, or vice versa. Differences in culture may have a profound effect upon how the normative message should be conveyed in order for it to be well received. Cox and Bates (in press) found that for a campus that is composed primarily of members who belong to a religion that proscribes the use of alcohol (i.e., The Church of Jesus Christ of Latter-day Saints), the reference group from which the norms for alcohol use are derived need to be chosen carefully. The authors found that students who consumed alcohol perceived the use of “the average student” fairly accurately, as “the average student” was known to not drink. Additionally, the authors found that at best, perceptions of the average student’s use of alcohol were not related to personally reported use and that a more effective reference group would be “the average student who drinks.” Failure to account for unique differences in population may have disastrous consequences for social norms interventions. Multiple studies on social norms suggest that there is a strong possibility that some students are prone to rebel against these approaches if they are not implemented in a thoughtful manner (Cox & Bates, in press; Nagoshi, Wood, Cote, & Abbit, 1994; Rimal & Real, 2003). The authors agreed with Wechsler and colleagues (2002) that the one size fits all approach to intervention should be avoided as it is likely to be ineffective at best, or conducive to paradoxical effects and increased alcohol use at worst.

The current study attempted to implement a social norms intervention tailored to the unique nature of a low alcohol use environment. Due to previous findings that students on this campus overestimated the amount of alcohol consumed by students who

drink (Cox & Bates, in press), an intervention that worked to correct this misperception was warranted. The intervention would present students with normative information on the average quantity of alcohol consumed by “the average student who drinks” in an attempt to decrease alcohol use by those who drink above the normative amount. In an effort to avoid increasing alcohol use by those who reported drinking under the norm, an injunctive normative approach that highlighted the appropriateness of drinking under the norm was used.

Answers for the following research questions were sought. First, do students who drink overestimate the amount of alcohol that other students who drink consume? If students have an accurate perception of alcohol use by others, then a correction of the norm is not possible, suggesting a lack of utility for this type of intervention. Second, for those in the experimental group who consume quantities under the norm and are exposed to the normative quantity along with the injunctive normative message (congratulating them for drinking in a healthy manner), will there be any change in their alcohol use? Third, would exposure to accurate normative information for quantity of alcohol use consumed per drinking occasion by “the average student who drinks” result in reduced weekly alcohol consumption? Finally, would exposure to accurate normative information on quantity of use per occasion result in reduced instances of problematic drinking (as defined by drinking four or more drinks per occasion by females, and five or more drinks per occasion by males)?

Method

Participants

In an effort to provide adequate estimates, and taking into account a standard response rate, a random sample of approximately 5,000 email addresses of main-campus undergraduate students were obtained from Utah State University's Registrar's office in the Fall of 2008. Data collection began in November of 2008. Only undergraduate students who were 18 years old or older were solicited to participate. Of the 5,000 email invitations sent, 1,061 (21.2%) valid responses were collected. Unfortunately, the number of email invitations sent to unmonitored accounts is unknown. Response rates between the experimental (524; 49.4%) and control conditions (537; 50.6%) were similar. Table 2.1 contains demographic information for those within the sample who reported any alcohol use in the past year.

More than half of the respondents were female (56.9%). The average age of the sample was 22.1 ($SD = 3.67$); 41.4% were between 18 and 20 years of age, 22.5% were between 21 and 22 years, 17.5% were between 23 and 25 years, and 17.4% were over 25 years of age. A vast majority, 92.3%, self-identified as Caucasian, 1.7% identified as Asian/Pacific Islander, 3.1% identified as Hispanic, 0.7% identified as American Indian/Alaskan Native, 0.7% identified as African American, and 1.3% identified as "other." A small percentage (2.5%) of respondents identified themselves as belonging to or pledging for a sorority or fraternity, 5.7% as intercollegiate athletes. Three quarters (77.3%) reported living off campus. Finally, 84.6% identified themselves as being members of The Church of Jesus Christ of Latter-day Saints (LDS), 7.6% identified as

Table 2.1

*Demographic Information for Respondents Who Reported Any Alcohol Use in the Past**Year, by Condition*

	Total	Exp	% of Total	Con	% of Total
Sex					
Female	105	52	50	53	50
Male	91	44	48	47	52
Age					
18-20	68	32	47	36	53
21-22	50	27	54	23	46
23-25	30	17	57	13	43
Over 25	48	20	42	28	58
Race					
White	169	83	49	86	51
Hispanic	12	4	33	8	67
Other race	15	9	60	6	40
Marital status					
Single	145	74	51	71	49
Married	41	16	39	25	61
Divorced	10	6	60	4	40
Residence					
On-campus	36	21	58	15	42
Off-campus	160	75	47	85	53
Religious affiliation					
LDS	79	37	47	42	53
No affiliation	62	31	50	31	50
Other affiliation	53	28	53	25	47
Greek affiliation					
Member	12	5	42	7	58
Pledge	3	0	0	3	100
Intercollegiate athlete	19	9	47	10	53
Students drinking above the normative quantity (4 drinks)	57	27	47	30	52

having no religious affiliation, and 7.0% identified themselves as affiliating with another religious organization.

Due to the low response rate, participant demographics were compared to the school's demographics to determine representativeness. Overall, the sample resembled the population at the university with the single known exception of Caucasian students (92.3% in the sample vs. 85.4% in the population). Compared to the university's data from 2006, students in the sample who reported living off campus appear to be overrepresented (77.3% in the sample vs. 70.0% in the population; USU 2008). The percentage of participants who identified themselves as LDS (84.6%) was similar to previous estimates of this population (Cox & Bates, in press; USU, 2008).

Questionnaire Measures

The online survey included questions regarding demographics, personal and perceived use of alcohol by USU students, acceptability of personal and perceived use of alcohol by USU students, and alcohol censoring behaviors (see Appendix B).

Demographics. Requested demographic information consisted of: classification (freshman, sophomore, junior, senior), age, gender, extracurricular activities (fraternity or sorority membership, intercollegiate athlete), ethnicity, living arrangements, GPA, full or part-time status, religious affiliation, marital status, and semesters on campus.

Descriptive norms. Descriptions of personal and perceived use of alcohol were obtained using the daily drinking questionnaire (DDQ; Collins, Parks, & Marlatt, 1985). This measure asked participants to report their average alcohol use for the preceding 30 days for each day of the week. Additionally, participants also reported the number of hours they spent drinking per drinking occasion. For perceptions of others' alcohol use

the Drinking Norms Rating Form (D NRF; Baer et al., 1991) was used. This measure was created by modifying the DDQ to ask participants to report their perceptions of others' average alcohol use for the preceding 30 days for each day of the week. As with the DDQ, the number of hours the participants perceived that others drink is recorded also.

Injunctive norms. An injunctive normative message was given only to those in the experimental group who reported alcohol use that was less than the normative quantity. When such an individual's reported quantity was displayed next to the higher normative quantity, a message appeared that encouraged the individual's continued use of alcohol in a healthy manner.

Intervention

For the 49% of participants who were randomly assigned to the intervention group, the subjective norms portion of the intervention consisted of displaying their reported quantity of alcohol use alongside the normative amount of alcohol use for other students who drink. This normative data was gathered from students at the same university (though not necessarily from the same students participating in the current intervention). Using an online survey, students had been asked questions about personal alcohol use using the Core Institute's Campus Survey of Alcohol and Other Drug Norms (Presley & Meilman, 1994). Students began the survey by indicating their personal alcohol use as well as their perceptions of use by the separate referent groups. After giving their data on personal and perceived alcohol use, average quantities of alcohol use reported by students who consume alcohol were displayed with the quantity of use the individual student reported drinking (i.e., "Previously you reported that you consume *reported quantity* drinks per drinking occasion. The average student who drinks reported

consuming *normative quantity* drinks per drinking occasion.”). A similar format was used for comparing perceptions of use by others (i.e., “Previously, you reported your perception that the average student who drinks consumes *reported perceived quantity* drinks per drinking occasion. The average student who drinks reported consuming *normative quantity* drinks per drinking occasion.”). This same style was also used to compare perceptions of appropriate use.

Procedures

Data collection and intervention information for this study were conducted electronically through the use of commercial survey software hosted on a secure server (see Appendix C). A random sample of undergraduate email addresses were obtained from the targeted university’s Registrar’s office. Potential participants received an email inviting them to click on an imbedded link in order to participate in the online study. Of the 5,000 emails sent to students, 50% were randomly assigned to the experimental condition and contained an embedded link that would take the student to a survey that included the intervention. The remaining emails contained a link that would take the student to a survey that did not include the normative information. Of the 1,061 students who chose to participate in the survey, 49% of the students were presented with a comparison of their quantity of alcohol use with the average quantity used by students from the targeted university who drink—based on estimates provided from data collected in Spring 2006.

The second round of data collection occurred 9 weeks after the intervention, and the third round of data collection occurred 9 weeks after the second round. During these rounds of data collection, students completed the measures distributed during the first

round of data collection. No normative information was presented during the second or third rounds of data collection.

Results

Baseline Drinking and Perceptions of Drinking

A one-way ANOVA was conducted to compare the control and experimental groups on perceptions of weekly quantity of alcohol use by other students who drink. “The average student who drinks” was perceived by those in the experimental group to have consumed alcohol on average 3.36 ($SD = 2.47$) times per week, while the control group reported that this group consumed alcohol 3.22 ($SD = 2.49$) times per week—this difference was not statistically significant difference, $F(1, 195) = 0.172, p = .679$; Cohen’s $d = 0.06$).

Estimations of Alcohol Use by Others

The sample’s accuracy of estimations of others’ quantity of alcohol use was calculated to determine whether those who reported any alcohol use ($n = 185$) were indeed overestimating the alcohol use of “the average student who drinks.” This was accomplished by comparing the average perceived number of drinks consumed per week (13.66, $sd = 12.06$) to the average number of personally reported drinks consumed per week (6.23, $sd = 7.73$). A one-sample t test showed that those who drink, significantly overestimated the number of drinks that other students who drink consume per week, $t(190) = 8.52, p < .001$, Cohen’s $d = 0.62$. The self/other discrepancy was calculated by subtracting the number of drinks reportedly consumed per week from the number of drinks perceived to be consumed by others who drink (Borsari & Carey, 2003). An

independent t test was used to determine whether differences in overestimation were present between the control and experimental groups. The results, ($t(190) = 1.33, p > .10$; Cohen's $d = 0.20$), suggest no significant differences in overestimating others' use of alcohol between the control and experimental groups.

Relationships Between Perceptions of Others' Use and Reported Personal Use

The data showed a significant relationship between perceptions of alcohol use by others and reported personal alcohol use. Using data collected prior to the introduction of the intervention, the relationship between perceived alcohol use by students who drink and reported personal alcohol use was investigated using Pearson's r correlations for the entire sample who reported drinking. Personal quantity of use and perceived quantity of use by students who drink were moderately correlated, $r = .41, p < .01$.

Effects of Injunctive Norms on Those Drinking Below the Norm

The injunctive normative component (congratulating those who drink less than the norm for drinking in a healthy manner), which was introduced to those who drank below the normative quantity, was used as a safety factor to keep those reporting alcohol use below the norm from increasing their alcohol use in an effort to drink-up to the norm. As shown in Table 2.2, for those in the experimental group exposed to the injunctive norm, the average quantity of alcohol use did not increase significantly (0.42 drinks per week). For those in the control group, an increase of 1.04 drinks per week was found.

Table 2.2

Means and Standard Deviations of Weekly Alcohol Use for Those Who Reported Alcohol Use Below the Normative Quantity Prior to the Intervention

	Time 1		Time 2		Time 3	
	EXP	CON	EXP	CON	EXP	CON
Low-use participants	1.28 (1.38)	1.45 (1.44)	1.62 (2.07)	1.54 (2.10)	1.71 (2.74)	2.50 (2.19)

Effects of the Intervention Time 1 (Baseline) to Time 2

Table 2.3 shows the means and standard deviations of perceived and reported alcohol use by group (experimental and control) and time. A 2 (Time) by 2 (Condition) mixed-model ANOVA was used to evaluate the effects of the intervention on decreasing perceptions of normative alcohol use from Time 1 to Time 2. The main effects of Time and Group were found to be nonsignificant. However, the interaction (Time X Condition) was significant, though the effect was small, $F(1,112) = 5.02, p < .05$, partial Eta-squared = .04. The intervention appeared to be successful in decreasing the perceived normative use of alcohol for those in the experimental condition significantly more than was reported by those in the control group (see Figure 2.1). Table 2.4 shows the means and standard deviations of perceived and reported acceptable quantities of alcohol use per drinking occasion. Two separate 2 (Time) by 2 (Condition) mixed-model ANOVAs were used to evaluate the effects of the intervention on decreasing reported acceptable quantity of alcohol use, and perceived acceptable quantity of alcohol use from Time 1 to Time 2. For both of these ANOVAs, both the main effects of Time and Group and their interactions were found to be nonsignificant.

Next, a 2 (Time) by 2 (Condition) mixed-model ANOVA was used to evaluate the effects of the Intervention on decreasing actual alcohol use. The main effect for Group

Table 2.3

Quantity of Alcohol Use in Drinks per Week, by Condition and Time

	Time 1 (N = 191)		Time 2 (N = 114)		Time 3 (N = 57)	
	EXP	CON	EXP	CON	EXP	CON
Perceived quantity	14.50	12.86	10.15	12.25	10.43	13.26
Reported quantity	5.61	6.81	4.90	5.08	3.81	6.07

Note. Time 1 - preintervention, Time 2 - 9-weeks postintervention, Time 3 = 18-weeks postintervention.

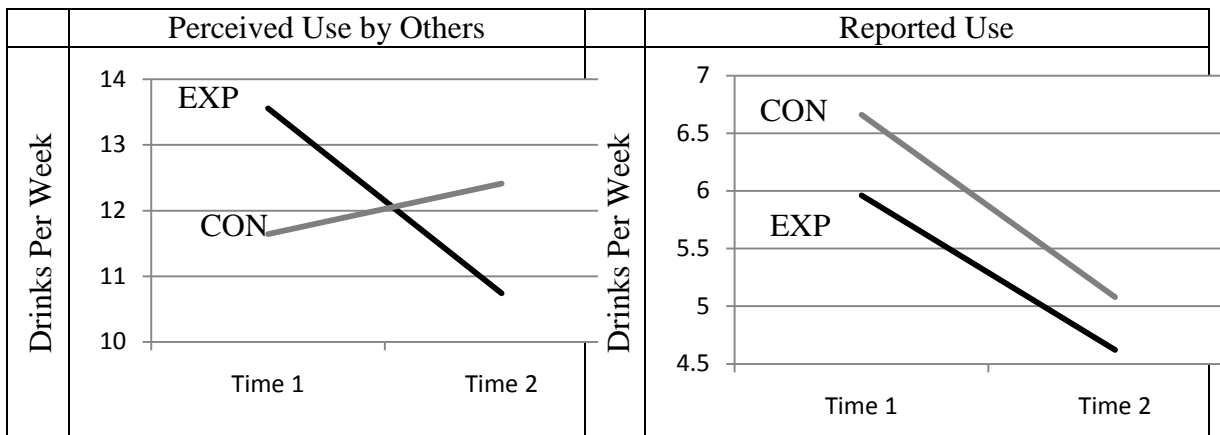


Figure 2.1. Perceived and reported use of alcohol from Time 1 to Time 2 (N = 114).

Table 2.4

Means and Standard Deviations of per-Week Instances of Problematic Alcohol Use for The Sample and for Those Who Reported Problematic Use, by Condition

	Time 1		Time 2		Time 3	
	EXP	CON	EXP	CON	EXP	CON
All participants	0.56 (0.88)	0.60 (0.95)	0.35 (0.70)	0.54 (0.92)	0.27 (0.64)	0.56 (0.93)
Participants reporting problematic use	1.63 (0.71)	1.84 (0.68)	0.89 (0.90)	1.29 (1.00)	0.55 (0.82)	1.00 (1.00)

and the interaction (Time X Group) were shown to be nonsignificant. The main effect of Time was significant, $F(1, 112) = 8.75, p < .005$, partial eta-squared = .07. Thus, both the experimental and control groups experienced a significant decrease in alcohol use from Time 1 to Time 2 (see Figure 2.1).

Effects of the Intervention Time 1 (baseline), Time 2, and Time 3

A 3 (Time) by 2 (Condition) mixed-model ANOVA was used to evaluate the effects of the intervention on decreasing perceptions of normative alcohol use from Time 1 to Time 2 to Time 3. For the remaining 57 participants who participated at all three data collection times, the two main effects as well as the interaction were shown to be nonsignificant (see Figure 2.2).

A 3 (Time) by 2 (Condition) mixed-model ANOVA was used to evaluate the effects of the intervention for those who participated during all three data collection times ($N = 57$). The main effect of Condition was found to be nonsignificant. The main effect of Time was significant, $F(1, 55) = 5.03, p < .05$, partial eta-squared = .08. Thus both the

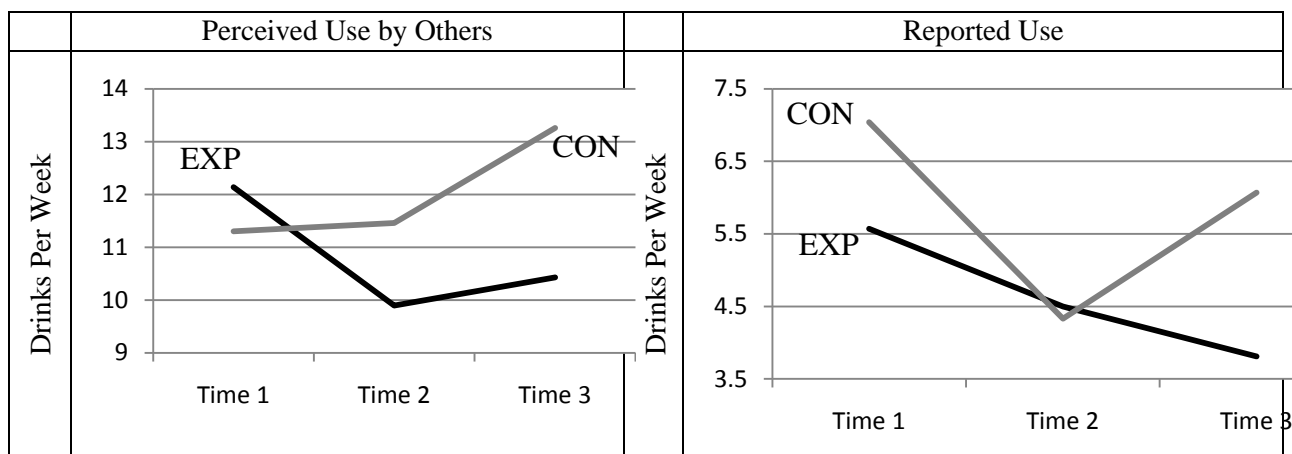


Figure 2.2. Perceived and reported use for those who responded during all three data collection points ($N = 57$).

experimental and control group experienced a significant decrease in alcohol use throughout the 18-week intervention. The interaction (Time X Condition) was not statistically significant, $F(1, 55) = 2.05$, $p = .135$, partial eta-squared = .04. As shown in Figure 2.2, while both conditions experienced a decrease in alcohol use from Time 1 to Time 2, only the experimental group maintained the decreased use of alcohol, while those in the control group returned to levels similar to Time 1 levels of alcohol use.

Changes in Problematic Alcohol Use

Changes in problematic alcohol use (traditionally defined as the consumption of four drinks by females, and five drinks by males during a drinking occasion) were investigated from Time 1 to Time 2 using the DDQ. Prior to the intervention, 32 participants (34.4%) in the experimental condition and 32 participants (32.7%) in the control condition reported engaging in problematic alcohol use. At Time 2, only 11 participants (22.9%) in the experimental condition and 17 participants (28.8%) in the control condition reported problematic alcohol use. Finally, at Time 3, five participants (16.7%) in the experimental condition, and eight participants (29.6%) in the control condition reported problematic alcohol use. Proportionally, the experimental condition experienced a decrease in problematic alcohol use. For the control condition, the proportion of participants reporting problematic alcohol use remained relatively unchanged.

Similar to weekly alcohol use, for those who reported a problematic style of drinking prior to the intervention the mean number of binges per week decreased for those in both conditions. Table 2.3 shows the changes in binges per week. Using only

those participants who reported at least one instance of problematic alcohol use prior to the intervention, a mixed-model ANOVA showed a decrease in the main effect for problematic alcohol use from Time 1 to Time 2 ($F(1, 37) = 23.81, p < .005$, partial eta-squared = .39). The main effect for Condition, and the interaction between Condition and Time, were nonsignificant.

Using all three data collection points with those who reported at least one instance of problematic alcohol use prior to the intervention, the findings are similar to those for weekly alcohol use. The main effect of Time was found to be significant, $F(1, 18) = 14.48, p < .005$, partial eta-squared = .45. The main effect of Condition and the interaction were nonsignificant. However, the trend, as shown in Figure 2.3, shows that similar to weekly alcohol use, those in the control condition rebounded toward the mean number of days per week that problematic alcohol use occurred measured at Time 1. For those in the experimental condition, the mean number of days that alcohol was used in a problematic manner remained at the lower rate measured at Time 2.

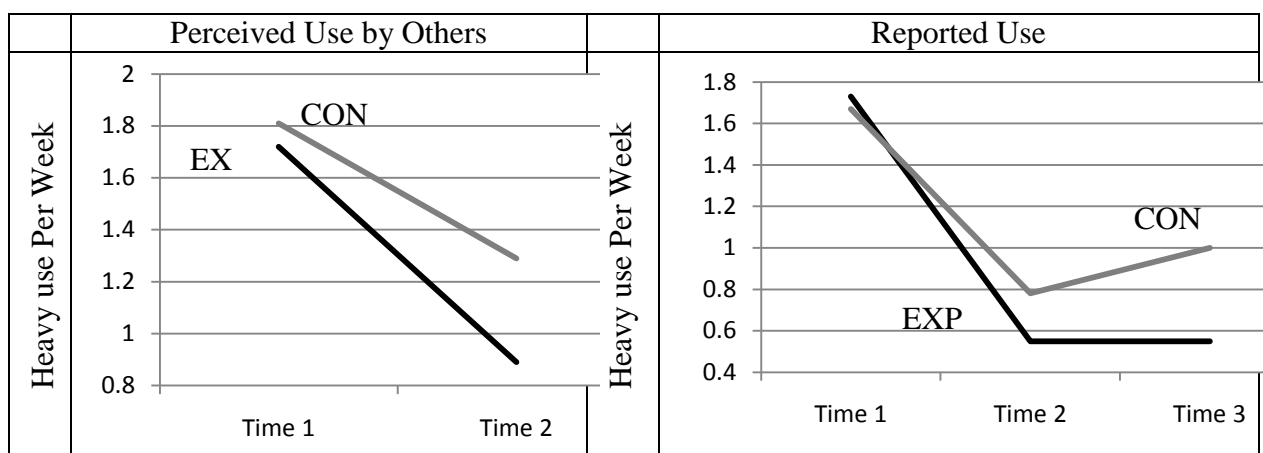


Figure 2.3. Instances of problematic drinking from Time 1 to Time 2 ($N = 39$), and with all three data collection points ($N = 20$).

Discussion

The current study evaluated the effects of a social norms intervention targeting those at in an environment where alcohol is infrequently used. The intervention borrowed aspects of previous social norms interventions, including the use of personalized norms (Lewis et al., 2007), the use of both descriptive and injunctive norms (Borsari & Carey, 2003), and the use of a computer-based approach for delivering the normative information (Neighbors et al., 2004). The results of this study are promising; however, further research is necessary to determine the effects of social norms interventions in low alcohol use environments.

Social norms approaches to alcohol use posit that students tend to consume quantities of alcohol that are commensurate with their perceptions of use by their peers. Additionally, the perceived quantity is often overestimated. This misestimation was observed in the data presented herein. Social norms interventions work by providing appropriate norms to reduce overestimated perceptions of use by others. Decreasing the perceived normative quantity of alcohol has been shown to be effective in decreasing alcohol use (Borsari & Carey, 2003). When the perceived normative quantity of alcohol use is reduced, it is expected that students will continue to consume alcohol quantities commensurate with their peers, but that the perceived quantity will be accurate and consist of far fewer drinks than previously perceived. The current study supports the use of social norms intervention for decreasing student alcohol use. The findings of this study show that following the intervention, perceived quantities of alcohol use by others were significantly reduced for those in the experimental group. As predicted, those in the

control group (who did not receive corrective normative data) did not show a significant decrease in perceived alcohol use by others.

The injunctive normative message that was shown to those who reported alcohol use under the normative quantity was displayed as a safety measure in order to not influence those in this group to drink up to the norm (Schultz et al., 2007). Those in this group reported an average increase of 0.4 drinks per week from Time 1 to Time 3. This is less than their counterparts in the control group who reported an average increase of 1.04 drinks per week. However, because each participant in the experimental group was exposed to both the subjective and injunctive normative portions of the intervention, this study is not able to determine whether the injunctive portion of the intervention truly was helpful in keeping this group from increasing their alcohol use. It is possible that those who drink less than the normative quantity already have protective factors in place, and are not likely to be influenced by the introduction of a social norm that suggests they increase their drinking.

For both the experimental and the control groups, a significant decrease, $F(1, 112) = 8.75, p < .005$, partial eta squared = .07, in reported alcohol use was found. It is possible that this across-the-board decrease in alcohol use was due to the alcohol-related mortality that occurred on campus between the introduction of the intervention and the first round of postintervention data collection (see accompanying Process Evaluation). Unfortunately, no studies could be found that contained information on how an alcohol-related student death affects the use of alcohol on campus. The second postintervention round of data collection occurred 18 weeks after the intervention, and by that time, the media attention surrounding the death had decreased. Findings from this round of data

collection showed that those in the control condition reported consuming weekly quantities that resembled their use prior to the fatality. However, those in the experimental condition continued to report decreased use of alcohol.

While the use of alcohol by the general student population for the studied university is relatively low (approximately 80-90% of students in our sample reported no alcohol use in the previous year; USU, 2008) reported problematic styles of drinking by those who do drink, show the need for intervention in this population. Prior to the intervention, 34% of the sample reported a style of alcohol use that was problematic (i.e., females consuming four or more drinks per drinking occasion, and males consuming 5 or more drinks). During the course of the intervention, the mean number occasions of problematic alcohol use initially decreased for those in both conditions. Again, this may reflect the history effects stemming from the death on campus or another history effect. This possibility is bolstered by the measured differences between the control and experimental conditions at the 18-week follow-up. During this final round of data collection only those in the experimental condition maintained their decreased instances of problematic alcohol use, while those in the control condition returned to levels similar to those measured during the first round of data collection (see Figure 2.3).

Intervention Follow-up Times

Postintervention follow-up times for brief interventions vary by study. Some range from 4 to 6 weeks (Clapp et al., 2003; Lewis & Neighbors, 2007) and 6 months (Collins et al., 2002; Neighbors et al., 2004). Studies have found significant differences between experimental and control groups at follow-up times shortly after the presentation of the normative information (4 to 6 weeks postintervention; Borsari & Carey, 2000;).

Studies that include follow-up times of 3 to 6 months postintervention have reported that changes in alcohol use have continued to be found (Lewis et al., 2007; Neighbors et al., 2004). However, this difference has not always been found at follow-up periods greater than 6 weeks (Collins et al., 2002). Short-term (4 to 6 weeks) and long-term (3 to 6 months) follow-up times provide helpful information for those implementing social norms interventions. An intervention with immediate short-term effects may be useful to assuage the negative consequences of excessive alcohol during times and special occasions when drinking may be more problematic (e.g., the first months of school for incoming freshmen, spring break). While an intervention with longer lasting effects may be helpful throughout an entire school year. Unfortunately, for brief social norms interventions, there is little data on the effects of the campaigns reaching farther than the 6-month follow-up timeframe.

History Effects

History effects may change the results of an intervention. During the current study, shortly after the intervention had been presented, a student died subsequent to an alcohol-related hazing incident that involved several students and multiple Greek organizations. This tragic death gained local and statewide media attention. The university's actions against the Greek organizations, the investigation, and the trials of those involved served to highlight the results of problematic drinking. Unfortunately, no published descriptions of changes in alcohol use following such a tragedy have been published. Therefore the results found in the current study cannot be compared to others studies to reveal a reliable trend.

The current study gives some insight into how alcohol use may be affected after

an alcohol-related student fatality. Unfortunately, no other studies could be found that describe changes in alcohol use after such a traumatic event. The current findings suggest that this type of an event leads to a temporary decrease in alcohol use, followed by a return to a style of use that is similar to preincident levels. Because of the alcohol-related death, it is difficult to determine the actual effects of the intervention on student alcohol use in this environment. This is compounded by the drastic decrease in the response rate from Time 1 to Time 2, and from Time 2 to Time 3 (see Figure 2.3).

Limitations

The current study attempted to solely use online means to implement a social norms intervention. This led to an underwhelming initial response rate and response rates at follow-up times that were lower than expected. Additionally, the survey only captured responses if the entire survey was completed, thus data from partial responders was lost. This less-than-desirable response rate likely stemmed from the use of an unsolicited email invitation (“spam”) and incentives that were not on par with similar research. While the study cost significantly less to implement, the results are not generalizable due to low initial participation and waning participation through the follow-up collection times. It is unknown whether those who completed measures at all three times differ from those who dropped out. While attempts were made to contact nonrespondents, email was the only available means of establishing contact, and the nonresponders continued to demonstrate a robust ability to ignore emailed solicitations.

In addition to the response rate, the lack of information on how an alcohol-related death on campus affects the use of alcohol by students is not available. Because of this lack of information, it is unclear whether the reduction in reported alcohol use by

students in both control and experimental conditions stemmed from this event, or if it was due to other unaccounted for history effects.

Future Directions

Future studies are needed on the effectiveness of a social norms intervention in low-use environments. While the current study gives support for the utility of social norms approaches in a well-specified low-use environment, the possibility exists that the religious composition of the campus may have had an effect on the intervention. Other campuses where alcohol use is a relatively low-frequency event due to strict alcohol use policies may have different results (Wechsler, Seibring, Liu, & Ahl, 2004). Further, the religious composition of a campus may have an effect. It is possible that social norms interventions may differ in effectiveness for low alcohol use environments based on the particular religion espoused by the majority of the campus. Studies of campuses with low alcohol use in environments espousing religions other than the LDS religion may provide further insight into effective ways of implementing social norms interventions in unique environments.

Additionally, future research might focus on ways to effectively recruit and maintain participation in online social norms interventions using more cost-effective incentives. While online and computer-based social norms interventions appear to be effective when properly conducted (Kypri et al., 2009; Neighbors et al., 2004), the incentives used to recruit and maintain participation in these studies are costly. This may place successful implementation of these interventions beyond the ability of many colleges that do not have thousands of dollars to spend on incentives.

Finally, the manner in which injunctive norms work in social norms approaches to reducing alcohol is not well known. The relationship between these norms and alcohol use is complicated (Neighbors et al., 2007), and no studies have investigated the effects of adding an injunctive normative component to an intervention based on subjective norms. A study comparing the three possible approaches (i.e., subjective norms alone, injunctive norms alone, and both subjective and injunctive norms together) might be valuable in determining the utility of injunctive norms approaches to intervention.

Conclusion

The findings of the current study suggest that a social norms approach to decreasing problematic alcohol use is a feasible and likely effective strategy in a low-use environment. While the findings were not conclusive, a significant decrease in use was achieved by those in both conditions and only in the experimental condition did this decrease in use appear to be maintained.

In addition to the findings showing the possible effectiveness for a social norms intervention, the current study shows the effects of an alcohol-related tragedy on reported alcohol use by students. After the tragedy, alcohol use by those in both conditions experienced a significant decrease in alcohol use. Unfortunately, alcohol-related fatalities are far too common (Hingson et al., 2005). While we attempt to prevent future such occurrences, there remains the possibility of furthering our efforts by utilizing the poignant effects that these deaths have on affected students to decrease future alcohol related mortalities.

CHAPTER 3

CENSURING, SOCIAL NORMS, AND COLLEGE STUDENT ALCOHOL USE

Abstract

Social norms approaches to reducing problematic alcohol use work by providing normative information about the acceptable quantity of use (descriptive norm) as well as the appropriateness of alcohol use in general (injunctive norm). The current study used online means to collect data from 189 participants on their alcohol use and their experience of being censured for using alcohol. Following the theory of reasoned action the study separated participants into groups based on their exposure to normative information that focused on conveying either a descriptive norm or an injunctive norm. Alcohol use for those censured through descriptive means (e.g, a request to drink less) and those censured through injunctive means (e.g., told that alcohol use was not acceptable) was compared. The results suggested that depending on the referent providing censure (significant other, friend, family member, other) the groups average alcohol use differed significantly with those censured through injunctive approaches consuming less alcohol. The study also investigated how those in the descriptive censure group and those in the injunctive censure group differed in their alcohol use when attitude toward being censured by the specified referent. The findings show that regardless of whether a positive or a negative attitude was reported toward being censured by the referent, an injunctive approach to censure was accompanied by decreased alcohol use.

Introduction

Alcohol Use by Students

Problematic alcohol use by college students has been shown to produce detrimental consequences including academic problems (Singleton, 2007), legal problems (Thompson, 2007), and an increased likelihood of sexual assault (Kaysen et al., 2006). In a comparison of those who did not engage in problematic alcohol use to those who reported drinking in a problematic manner, Wechsler and Kuo (2000) found that those who drank in a problematic manner were more likely to experience negative outcomes. Specifically, problematic drinkers were more likely to do something regrettable, engage in unsafe sex, become injured, need to seek treatment for alcohol overdose, and were more likely to drive after drinking. Driving while intoxicated is of much concern as there is evidence that college student mortality due to problematic alcohol use is increasing (Hingson et al., 2005).

Social Norms Interventions

Social norms approaches to decreasing alcohol use have emerged as one way to intervene with students who use alcohol in a problematic manner. Evidence suggests that students who consume alcohol show a general tendency to overestimate the amount of alcohol that other students consume (Perkins et al., 2005). This leads to an exaggerated norm for quantity of alcohol use that students may use as an anchor for judging their personal alcohol intake. In attempting to “drink-up” to the perceived norm, students place themselves at risk for the multitude of negative consequences stemming from problematic use. In addition to perceiving that others consume more alcohol than what

they actually do, students tend to overestimate the extent to which others are accepting of excessive alcohol use. When these two inaccurate perceptions are combined (inflated amounts of alcohol use, inflated acceptability of problematic alcohol use), students appear more likely to engage in problematic alcohol use. By effectively presenting students with correct normative information regarding alcohol use and acceptability of use, social norms interventions are capable of dissuading student from “drinking-up” to the false norm.

Distinctions Between Norm Types

Cialdini and Trost (1998) defined social norms as “rules and standards that are understood by members of a group, and that guide and/or constrain social behavior without the force of laws” (p. 152). Two types of social norms have been described: descriptive norms and injunctive norms. Descriptive norms are derived from what others do in a given situation, especially when the proper course of action is ambiguous. By observing others’ behaviors we can derive information on what is the normal thing to do. The other types of norms, injunctive norms, describe what is deemed appropriate for a situation, or what “should” be done in a given situation. These norms have the ability to not only prescribe behaviors by stating what behaviors are considered appropriate, but can proscribe unacceptable behaviors as well (Cialdini & Trost, 1998). Thus for alcohol use, the descriptive norm is the directly expressed or subtly perceived norm of how much a person should drink. For example, those belonging to a fraternity where heavy alcohol use is encouraged are exposed to directly expressed norms (e.g., being told “we drink a lot here”) and more subtle expressions of this norm (e.g., viewing others drink frequently). In this hypothetical setting the injunctive norm might be conveyed in terms

of “if you don’t drink like we do, you are not one of us.” Or, prompts to continue drinking in order that one’s behavior is deemed appropriate for the group.

Current research suggests that for behaviors that are highly censured (e.g. drug use, vandalism), the use of descriptive norms may produce paradoxical effects. Often, behaviors like heavy alcohol use become “highly censured” because they occur more frequently than desired. Thus, implicit in a statement that “heavy drinking needs to be reduced” is that heavy drinking is occurring at a high rate. Essentially, this message conveys that heavy use is the norm, and that the entity creating the normative message wishes it would change. Because people tend to align behaviors with the perceived norm (Cialdini, Reno, & Kallgren, 1990) a descriptive norms intervention under the aforementioned conditions may increase use. Similar descriptive normative messages have been shown to be the downfall of misguided social norms interventions. For instance a National Institute on Drug Abuse (NIDA) billion dollar campaign, the National Youth Anti-Drug Media Campaign, was shown to have increased drug use in its target population (Jacobsohn, 2007). Findings suggest that accompanying the descriptive norm that drug use is a problem and needed to be decreased was the belief that the current normative behavior concerning drug use was heavier use. The petition to then go against this norm was not heeded. Likewise, to tell a group of students who engage in heavy drinking that they need to decrease their use may encourage rather than discourage problematic alcohol use. For these behaviors, the presentation of an injunctive norm may be more appropriate. For instance, by conveying a sense that most people do not approve of excessive alcohol use, the chances of avoiding paradoxical behaviors are increased. By

bringing attention to the inappropriate nature of the action and not the increased prevalence, an injunctive message is more likely to produce desired changes in behavior.

For alcohol use, the relationship between injunctive norms and alcohol use has not been well elucidated. Results of a well-conducted meta-analysis supported the use of injunctive norms in social norms interventions to decrease college student alcohol use (Borsari & Carey, 2003). However, the researchers noted that the influence of these norms appear to differ based upon the referent group and therefore need to be well-investigated before being utilized. More recent findings suggested that the relationship between injunctive norms and alcohol use are dependent upon the proximity of the referent (Neighbors et al., 2008). When proximal referents (e.g., friends) were used the relationship was positive. So as approval decreased for alcohol use, drinking was less likely. When the referent was distal (e.g., students in general) the relationship was negative. So as approval for alcohol use decreased, drinking was more likely. While this change in relationships presents difficulties for those implementing social norms interventions, it is a well studied phenomenon. In multiple studies the nature of the relationship between injunctive norms and alcohol use has been shown to differ dependent upon the proximity of the referent (Borsari & Carey, 2003; Carey, Borsari, Carey, & Maisto, 2006; Cho, 2006). Because of the difference in expected reaction to the same message coming from different sources, it is important to gain a better idea of how someone will react to a specified referent.

Censuring as Social Norms Conveyance

Censure, the conveyance of disapproval for one's behaviors, may take the form of a descriptive norm or an injunctive norm (Cialdini, 2003). Censure based on descriptive

norms conveys the quantity of alcohol that should or should not be consumed (e.g., requests to stop drinking, or decrease use, or to only consume a specified quantity of alcohol). This is separate from censure based on injunctive norms, which would be less concerned with specifying a quantity to consume (or not consume), but would focus on conveying disapproval (e.g., stating “I wish you wouldn’t do that”). This injunctive norm may be delivered as the opinion of a group, or may come from an individual source (Cialdini & Trost, 1998; Neighbors et al., 2008; Schultz et al., 2007). In the context of an individual, this is seen in approval or disapproval for a behavior as communicated by the individual referent such as a close friend or romantic partner (Etcheverry & Agnew, 2008).

The mere communication of a norm through censure or other means may not effectively influence changes in behavior. Festinger (1954) suggested that personal relevance of communicated normative information is needed before compliance with the norm is expected. For example, if a student is exposed to norms of a different culture, and those norms are not meaningful because of cultural differences, a change in behavior is not likely. Thus the ability to predict specific behaviors is complicated and requires the inclusion of an attitudinal component. The theory of reasoned action provides a model for determining the significance of a referent in influencing behaviors.

Social Influence and the Theory of Reasoned Action

Early research by Ajzen and Fishbein (1973) suggested that normative influence is not always constant. Either the attitudinal factor or the social norm factor will weigh more heavily in determining behavioral intention, and the weight allotted is heavily influenced by the situation. When applied to alcohol use this suggests that attitudes

toward a referent group will greatly determine how social norms will affect drinking behaviors.

Using social norms information to influence behaviors is consistent with the theory of reasoned action (Fishbein, 1979). Following the theory of reasoned action, an individual's behavior is strongly predicted by that individual's intention to perform that behavior (see Figure 1). Thus, to predict whether a college student will consume an excessive amount of alcohol at a party, the most efficient thing to do is ask whether the student intends to drink an excessive amount of alcohol at a party (Fishbein, 1979). Predicting this intention are attitudinal and normative factors. The attitudinal factor consists of a person's attitude toward performing the behavior, and is a function of the person's beliefs. This includes the person's expectancies concerning the consequences of the behavior. Thus, the student who believes that consuming an excessive amount of alcohol at a party will lead to a desirable outcome is more likely to hold a favorable attitude toward that behavior and is more likely to intend on performing and therefore performing the behavior. Subjective norms are perceptions of what is appropriate. These

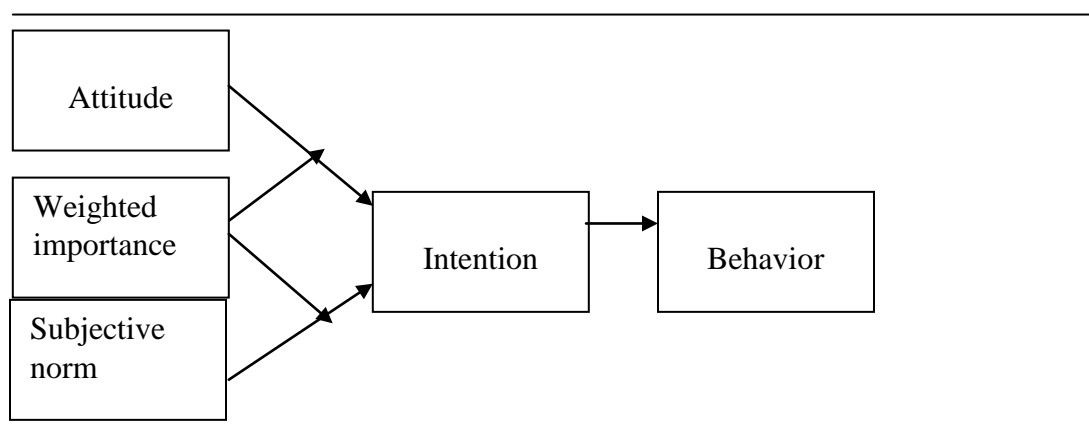


Figure 3.1. The theory of reasoned action (Fishbein, 1979).

are simply injunctive norms as communicated by specified, relevant others (Cialdini & Trost, 1998). Because the impact of social norms messages may vary dependent upon who delivers the norm, it is important to identify referent groups that are viewed as relevant to the population targeted for intervention.

Relevant Others

Research on social norms and college student alcohol use has shown support for the influence that proximal others (friends, members of close social group) have on personal alcohol use (Cho, 2006) and suggest that distal others (the average student) are less likely to influence drinking practices (Neighbors et al., 2008). While perceptions of friends' alcohol use has repeatedly been shown to have a strong positive relationship with reported use, family members and significant others are also believed to have an impact on alcohol use. Though individual normative groups may be considered, according to the theory of reasoned action, the influence that social norms have on behavioral intention is based on a summation of referents. Thus if college students perceive that most of their normative groups believe that they should binge drink, the perceived social pressure to binge drink will increase the more they are motivated to comply by each normative group (e.g., friends, family members, significant others).

Subjective norms communicated by family members have the potential to influence an individual's substance use significantly more than other approaches to influencing behaviors such as parental monitoring (Voisine, Parsai, Marsiglia, Kulis, & Nieri, 2008). However, the influence of familial subjective norms on alcohol use has not been well researched. One study looking at variables predicting student alcohol use found

a weak relationship between familial permissiveness toward alcohol use and use while at school (Faulkner, Alcorn, & Garvin, 1989). Outside the realm of alcohol use, Neighbors, Lee, Lewis, Fossos, & Larimer (2007) found support for injunctive normative influence on college students for gambling. The researchers caution that for some behaviors and for some referents, college students are influenced by injunctive norms, but that the relationship between injunctive norms and a given behavior is complicated and predicting the direction an injunctive norm may take (positive or negative relationship) can be difficult.

Subjective norms as expressed by individual significant others have been shown to significantly impact substance use (Etcheverry & Agnew, 2008). There is also evidence that the injunctive norm that is communicated by significant others may impact alcohol use (Roberts, Leonard, Wilsnack, & Wilsnack, 1997). However, this relationship has not been well studied and there is evidence that a lack of concordance in attitudes toward drinking within a romantic relationship may diminish the impact of a communicated subjective norm. Thus it may be that the spouse who drinks is less likely to be influenced by his or her significant other if the other holds a negative attitude towards alcohol use. Conversely, a troubled relationship may lend itself to one of the partners increasing his or her alcohol use (Leadley, Clark, & Caetano, 1999). For those increasing use in reaction to a spouse's disdain for alcohol, the weakened impact of the subjective norm may stem from the diminished quality of the relationship; however, the relationship between the discordant drinking practices and diminished influence of the subjective norm remains intact. While there is some evidence that significant others may

be able to influence their partner's alcohol use through normative influence, more research is needed.

The Current Study

Previous research has established that providing social norms information in well-controlled settings can influence college students to decrease alcohol use. However, no studies have looked at the utility of social norms information to elicit change when it is delivered by an individual outside of controlled interventions. The current study attempted to elucidate the impact social norms information (in the form of censure) might have on alcohol use when delivered by an individual outside of an organized intervention. More pointedly, this study is a first look at the question of whether an untrained individual might be able to influence another to consume less alcohol, and if so, what forms of influence are effective in accomplishing this task. Research related to this question suggests that an injunctive normative approach is more likely to succeed and that the proximity of the relationship between the censurer and the one being censured (e.g., romantic partners versus recent acquaintances) is of importance. Further, following the theory of reasoned action, an attitudinal component is considered important, as those who hold a positive attitude toward censure may react differently than those who hold a negative attitude.

To gain a better understanding of the relationships between social norms as delivered through censure, referent proximity, and attitudes toward being censured this study attempted to determine the following: (a) possible difference in alcohol use between those reporting past censure using injunctive norms versus descriptive norms,

(b) variations in alcohol use based on the proximity of the referent who reportedly censured the individual (e.g., “significant other,” “friend,” “family member,” or “anyone”), and (c) the impact of reported attitude toward being censured (either positive or negative). To address these questions, those participating in a social norms intervention were asked (preintervention) to report their current alcohol use, their past experiences of being censured for alcohol use (e.g., if they were asked to stop or reduce use vs. being shown disapproval for use, or both) by the specified referent groups, and their attitude toward members of the specified referent groups censuring them for their alcohol use.

Methods

Participants

Participants included 189 (55% female) undergraduate students at a large, public, western university who reported consuming alcohol in the past year. The average age was 22.74 years ($SD = 4.01$). The majority of participants identified Caucasian (87.4%). Seventy-six (39.8%) students identified themselves as belonging to The Church of Jesus Christ of Latter-day Saints, a religion that proscribes the use of alcohol. An additional 24 students reported a past affiliation with the LDS religion for a total of 100 (52.4%) students who reported a past or present affiliation with the religion. The sample resembled the university’s student population on all demographic variables with the exception of religious affiliation. Previous studies have estimated the number of students at the university who claim affiliation with the LDS church to be around 85%.

Measures

Demographics. Requested demographic information consisted of: classification (freshman, sophomore, junior, senior), age, gender, extracurricular activities (fraternity or sorority membership, intercollegiate athlete), ethnicity, living arrangements, GPA, full or part-time status, religious affiliation, marital status, and semesters on campus.

Alcohol use. The daily drinking questionnaire (DDQ; Collins et al., 1985) was used to measure weekly alcohol use. The measure required participants to think back over the past months and then to think of the typical week. Participants are then asked to write the typical number of drinks they consume on each day of the week along with the number of hours spent drinking on that day. Using the DDQ, weekly quantities of alcohol use and number of days drinking were calculated for each participant. Weekly quantities and number of days drinking per week were significantly positively skewed so a square-root transformation was performed in order to better normalize the data (Tabachnick & Fidell, 2007). Outliers were handled for weekly alcohol quantities by decreasing the outlying quantities to one unit above the highest, nonoutlying quantity (Tabachnick & Fidell, 2007).

Normative censoring. In order to measure instances of censure by specified referents, participants were asked five questions about their past experience of being censured by specific referents (friends, family members, significant other, and acquaintance). Two of the questions investigated whether the person had been exposed to more descriptive normative approaches to censoring. The first question simply asked whether or not the specified referent had asked the participant to reduce drinking, and the second question asked whether or not the specified referent had asked the participant to

stop drinking. These were all answered either “yes” or “no.” The three remaining questions were used to determine whether injunctive normative approaches to censoring had been used. These questions focused on whether or not the specified referent had shown disapproval for alcohol use. These questions were: (a) the referent (e.g., my friend) told me that my alcohol use wasn’t okay, (b) the referent hinted that drinking wasn’t okay, and (c) the referent discouraged me from drinking. If any one of these three questions was answered affirmatively, the participant was considered to have been censured in an injunctive normative manner.

Attitude towards censoring. To measure attitudes towards being censured, participants were asked how they would react to being asked to stop or reduce drinking by the specified referent groups. For each referent group, participants rated their reactions as being “negative” “neutral” or “positive.”

Procedures

This study was conducted as part of a larger social norms intervention for problematic alcohol use. Data for this study were collected prior to the presentation of the intervention and were gathered through the use of commercial survey software hosted on a secure server. A random sample of undergraduate email addresses were obtained from the targeted university’s registrar's office. Potential participants received an email inviting them to click on an imbedded link in order to participate in the online study. Of the 5,000 emails sent out to students, 1,061 students (21%) chose to participate in the survey, and of these students 196 reported alcohol use in the past year, and 189 participants reported sufficient information to be included in this study.

Results

Differences Between Censuring Approaches

Participants were divided into three groups. The first group consisted of those who reported that they had not been censured by others for their alcohol use. The second group consisted of those who reported only having been censured through means that communicated a lack of approval/acceptance of their drinking (injunctive censure). The third group consisted of those who had been censured through means of disapproval and/or been told to stop drinking or to reduce their quantity of alcohol consumption (descriptive censure). Differences in alcohol use by participants who self-reported having been censured in a descriptive normative manner versus an injunctive normative manner were investigated. As shown in Table 3.1, those who had been actively discouraged from using alcohol, viewed as a more injunctive approach, drank less than those who were not censured, or were censured with means that included a more descriptive approach (told to

Table 3.1

Mean Number of Drinks Consumed Weekly by Type of Censure Experienced and Referent Group

Referent	Injunctive censure		Not censured		Descriptive censure	
	<i>n</i>	Quant	<i>n</i>	Quant	<i>n</i>	Quant
Significant other	15	3.53	149	5.87	20	9.45
Friends	69	4.67	72	6.03	49	8.20
Family members	44	4.63	103	5.59	41	9.49
Anyone	45	4.14	86	5.37	53	9.72

decrease a quantity of use). A one-way analysis of variance (ANOVA) was used to test for differences in quantity of alcohol use by censure group. The results revealed that the various approaches to censuring (no censuring, censuring to stop or reduce use, and censuring to convey disapproval) showed significant differences in reported weekly quantity of alcohol use for each of the referent groups. The effect sizes for these differences ranged from small to moderate (based on Cohen, 2002). Due to the number of analyses performed, all post-hoc tests used Tukey's honestly significant difference (HSD) in order to reduce the chances of making a Type I error.

Significant differences were found between type of censuring (i.e., no censuring, censuring to convey disapproval and censuring focused on stopping or reducing drinking) for the "significant other" referent group, $F_{2,177} = 3.53, p < .05, \eta^2 = .04$. Planned post-hoc analyses revealed a significant difference in weekly alcohol use between those who reported being censured through disapproval ($M = 1.24, SD = 1.53$) and those who were told to stop or reduce their drinking ($M = 2.64, SD = 1.62$), $t = 2.56, p < .05$. This suggests that for significant others, an approach that conveys disapproval and not an approach to reduce or stop one from drinking may be a most effective.

Significant differences were also found for the "friends" referent group, $F_{2,186} = 5.00, p < .01, \eta^2 = .05$. A significant difference in weekly alcohol use between those who reported being censured through disapproval ($M = 1.55, SD = 1.53$) and those who were told to stop or reduce their drinking ($M = 2.46, SD = 1.49$), $t = 3.16, p < .01$. As found with the referent group of significant others, conveying disapproval appears to be predictive of reduced alcohol use.

For "family members," a significant group variable was found, $F_{2,185} = 6.27, p <$

.01, $\eta^2 = .06$. Post-hoc analyses revealed a significant difference between being censured through disapproval ($M = 1.62, SD = 1.42$) and censuring to stop or reduce drinking ($M = 2.67, SD = 1.54$), $t = 3.15, p < .01$. Additionally, a significant difference was revealed between no censuring ($M = 1.77, SD = 1.57$) and censuring by requesting one to stop or reduce drinking, $t = 3.19, p < .05$. For this group, both a no censuring and censuring by conveying disapproval appear to be related to lower alcohol use as compared to censuring with the intent to reduce or stop one from drinking.

For “anyone,” a significant group variable was found, $F_{2,181} = 11.06, p < .001, \eta^2 = .11$. Planned post-hoc analyses revealed findings similar to those of “family members” with significant difference between being censured through disapproval ($M = 1.48, SD = 1.41$) and censuring to stop or reduce drinking ($M = 2.76, SD = 1.45$), $t = 4.05, p < .001$. Additionally, a significant difference was revealed between no censuring ($M = 1.71, SD = 1.57$) and censuring by requesting one to stop or reduce drinking, $t = 4.01, p < .001$.

Thus for all referent groups (significant other, friends, family member, and anyone) those who were censured through an injunctive approach consumed significantly less alcohol per week than did those who were censured using a descriptive approach. For “family member” and “anyone,” those reporting no censure consumed less alcohol than did those who were censured through descriptive approaches.

Attitudinal Influence

To determine the differences between those endorsing either a negative or positive attitude toward being censured and the type of censuring received (e.g., the relevant other conveyed disapproval only, or disapproval along with a message suggesting that the person needed to reduce or stop drinking), a one-way ANOVA was

conducted with participants separated into groups based on whether they endorsed a positive or a negative attitude toward being censured by the particular referent. Post-hoc analyses utilized Tukey's HSD to control for type I error. All effect sizes for the significant omnibus tests were found to be in the moderate range ($d = 0.11$ to 0.14).

For the referent group "significant other," the omnibus tests comparing weekly alcohol use by type of experienced censure were nonsignificant for those who held neutral and positive attitudes toward being censured, $F_{1,38} = 0.62, p > .05, \eta^2 = .02$; $F_{2,40} = 1.14, p > .05, \eta^2 = .02$, respectively. This suggests that for those who hold positive or neutral attitudes toward being censured, the form of the censure (e.g., disapproval or disapproval plus a request to decrease quantity of use) did not result in a significant difference in reported alcohol use. Differences in weekly alcohol use for those who endorsed a negative attitude toward being censured by their significant other, was nonsignificant, but the effect size was moderate, ($F_{2,38} = 3.12, p = .056, \eta^2 = .14$). This suggests that those with a negative attitude toward being censured by significant others differ by the type of censure received. Post-hoc analyses revealed a difference that approached significance in weekly alcohol use between those being censured through conveying disapproval ($M = 1.00, SD = 1.73$) and being censured through requests to stop or reduce drinking ($M = 3.95, SD = 0.91$), $t(37) = 2.32, p = .06$. Thus, those holding a negative attitude toward censure who reported being censured through an injunctive approach consumed less alcohol than those who reported being censured with a descriptive approach.

For the referent group "friends," the omnibus tests comparing weekly alcohol use by type of experienced censure, were non-significant for those endorsing negative and

neutral attitudes toward censuring, $F_{2,49} = 1.24, p > .05, \eta^2 = .05$; $F_{2,65} = 0.61, p > .05, \eta^2 = .02$, respectively. This suggests that for those who endorsed a negative or neutral attitude toward being censured, there were no differences in alcohol use dependent upon the type of censure experienced. For those who endorsed a positive attitude toward being censured by their friends, a significant effect was found, $F_{2,66} = 3.89, p = .025, \eta^2 = .11$, suggesting that those with a positive attitude toward being censured by friends differ by the type of censure received. Post-hoc analyses revealed a single significant difference between being censured through conveying disapproval ($M = 1.20, SD = 1.69$) and being censured through requests to stop or reduce drinking ($M = 2.54, SD = 1.52$), $t(30) = 2.65, p < .05$. Thus for those who reported being okay with receiving censure from their friends, those who had been censured through an injunctive approach consumed less alcohol per week than did those who were censured through a descriptive approach.

For the referent group “family members,” similar to the referent group “significant other,” the omnibus tests comparing weekly alcohol use by type of experienced censure, were non-significant for those endorsing neutral and positive attitudes toward censuring, $F_{2,47} = 2.31, p > .05, \eta^2 = .09$; $F_{2,90} = 1.67, p > .05, \eta^2 = .04$, respectively. This suggests that for those who endorsed a neutral or positive attitude toward being censured, there were no differences in alcohol use stemming from the type of censure experienced. For those who endorsed a negative attitude toward being censured by their family members, a significant effect was found, $F_{2,42} = 3.40, p < .05, \eta^2 = .14$, suggesting that those with a negative attitude toward being censured by family members differ by the type of censure received. Post-hoc analyses revealed a single significant difference between being censured through conveying disapproval ($M = 1.11,$

$SD = 1.00$) and being censured through requests to stop or reduce drinking ($M = 2.59$, $SD = 1.31$), $t(30) = 2.43$, $p = .05$. Thus, for those who reported that they held a negative approach to being censured by family members, those who reported censure through an injunctive approach consumed less alcohol per week than did those who reported being censured through a descriptive approach.

For the referent group of “anyone,” the omnibus test comparing weekly alcohol use by type of experienced censure, was nonsignificant for those endorsing neutral attitudes toward censuring $F_{2,47} = 2.35$, $p > .05$, $\eta^2 = .09$. This suggests that for those who endorsed a neutral attitude toward being censured, there were no differences in alcohol use stemming from the type of experienced censure. For those who endorsed a negative attitude toward being censured by “anyone,” a significant effect was found, $F_{2,39} = 5.84$, $p < .01$, $\eta^2 = .23$, suggesting that those with a negative attitude toward being censured by family members differ by the type of censure received. Post-hoc analyses revealed a single significant difference between not being censured ($M = 1.49$, $SD = 1.34$) and being censured through requests to stop or reduce drinking ($M = 3.32$, $SD = 1.54$), $t(31) = 3.39$, $p < .01$. Additionally, a significant effect was found for those who endorsed a positive attitude to being censured by “anyone,” $F_{2,89} = 6.67$, $p < .01$, $\eta^2 = .13$. This suggests that those with a positive attitude toward being censured by anyone differ by the type of censure received. Post-hoc analyses revealed a significant difference between being censured through conveying disapproval ($M = 1.04$, $SD = 1.00$) and being censured through requests to stop or reduce drinking ($M = 2.59$, $SD = 1.31$), $t(30) = 3.49$, $p < .01$. Additionally a significant difference existed between not being censured ($M = 1.49$,

$SD = 1.34$) and being censured through requests to stop or reduce drinking ($M = 3.32$, $SD = 1.54$), $t(31) = 2.67$, $p = .025$.

Discussion

The problematic use of alcohol by college students is very concerning due to the nature of the consequences that may stem from this style of use. Fortunately, some intervention efforts appear to be effective at decreasing problematic alcohol use among college students. The current study sought to better elucidate the impact of censuring and attitude toward being censured on alcohol use. Specifically, the use of censure to convey disapproval toward drinking (an injunctive approach) was compared to censuring by requesting that the other person drink less or stop drinking (a descriptive approach). Overall, the results suggested that a strategy that emphasizes showing disapproval toward alcohol use may be more effective than direct requests that the person drinking either consume less or cease consumption. Overall, those who reported having been censured through injunctive approaches reported significantly less alcohol use than did those who reported having been censured through a descriptive approach. This finding held true even when those being censured reported that they held a negative attitude toward censure by the specified referent (e.g., significant other, family member). These findings are consistent with a well-controlled systematic review of social norms literature conducted by Borsari and Carey (2003). The authors found that injunctive normative messages appeared to be more successful at influencing those who drink to consume less alcohol than were descriptive normative messages. Descriptive normative messages convey a sense of what an appropriate amount of alcohol to consume is and does not

necessarily provide information as to whether increased amounts are met with approval or not.

In addition to investigating the influence of censuring by disapproval versus censuring by requests to decrease/stop drinking, the study considered the impact that an individual's attitude toward being censured had on alcohol use. The theory of reasoned action states that intention to perform a behavior is influenced by the interplay between social norms and attitudes. In accordance with the theory of reasoned action and including the attitudinal component, the context in which censure was introduced was studied in a more precise fashion. Findings presented herein suggest that the proximal nature of the one censuring is of importance in how a given form of censure is received. For those who were censured by "significant others" the effect size for those who held a negative attitude toward being censured suggests a meaningful difference in weekly alcohol use dependent upon the type of censure received. In this case, conveying disapproval appears to be more effective than making requests to stop. However, this was only true for those who reported that they looked negatively upon being censured for alcohol use. Thus for those who do not mind being censured, either approach (disapproval or requesting reductions in use) appears to be equally effective.

For the referent group of "friends" the type of censure did not appear to impact alcohol use for those who held a negative or neutral attitude toward being censured. However, for those who held a positive attitude toward being censured by friends, there was a significant difference with those being censured through disapproving means drinking less than those who were censured by being asked to stop/reduce drinking.

For “family members” there were no significant differences in censure style for those with a neutral or positive attitude toward being censured by those in their family. For those who held a negative attitude toward being censured, those who were shown disapproval as opposed to requests to stop/reduce drinking were found to drink significantly less. Again, an injunctive approach that conveys an action is not as acceptable or approved as an individual might believe appears to be the preferred approach to possibly decreasing alcohol use.

When the referent group was vague and “anyone” was included, the findings are less clear. For those with a negative attitude toward being censured a lack of censure was predictive of less alcohol use than those who were censured through requests to stop/reduce drinking. This may reflect some paradoxical effect wherein someone may be more likely to increase drinking when a person without a well-established relationship attempts to intervene. When well established relationships were compared (e.g., significant other, friend, family member) an injunctive approach to censure was often more effective than a request to stop/reduce drinking or no censure at all. Unfortunately, the use of “anyone” could include those in well-established relationships. Due to the ambiguity of “anyone” the current results cannot be interpreted as how a person might react to “unknown others” as was originally intended.

In keeping with the theory of reasoned action, the intention to perform a behavior (and indirectly the behavior itself) is determined by the interplay between attitudes and social norms. As shown by the present study, alcohol use differed dependent upon the referent group in question, the attitude held toward being censured by the indicated referent, and the type of social norms approach that was utilized. The interplay between

attitudes toward referents and censoring approaches show that overall, an injunctive approach by a proximal referent is the safest approach as it is more likely to be related to lower alcohol use. These findings bolster those of Neighbors and colleagues (2008) who found that dependent upon the proximity of a referent, injunctive normative approaches were either positively or negatively associated with alcohol use. For proximal referents (e.g., friends and parents) the belief that others approved of heavy drinking was related to increased use of alcohol. However, when distal referents were used (e.g., the average student) a significant relationship was not found, or a negative relationship was found. Research on the use of injunctive norms suggests that the use of these norms can be helpful. The current study and that of Neighbors and colleagues (2008) shows that the context in which injunctive norms are utilized is important in determining whether they are appropriate. By utilizing an injunctive normative approach alongside of a descriptive approach it is possible that social norms approaches to decreasing problematic alcohol use by college students could be strengthened.

Limitations

A cross-sectional method of data collection was employed for this study. Because of this, the findings are correlational and causality/direction of influence cannot be inferred. While it is possible that those who have been exposed to injunctive normative censoring by proximal referents subsequently reduced their alcohol use, it is also possible that those who decrease their alcohol use are more likely to recall this type of interaction in the past. Additionally, it is possible that those who drink less are more likely to elicit comments of disapproval instead of requests to consume less alcohol, and those not

receiving censure do not drink in a manner deserving of intervention by others. A longitudinal design might be able to better explicate this relationship.

Data for this study were collected in an environment where alcohol use is a relatively low-frequency event. Because of the unique nature of this population it is possible that the findings will not generalize to populations where alcohol use is more common. There is evidence that those who drink in environments where alcohol consumption is an infrequent event may react to censure in a negativistic manner (Cox & Bates, in press). The effects of censure type on subsequent alcohol use may be better studied using an at-risk population, or those who are currently receiving services for alcohol abuse. By controlling the type of censure given in a controlled setting, a better understanding of differences in impact on subsequent alcohol use might be obtained.

Implications for Prevention

The results of this study suggest the possibility that the communication of an injunctive normative message may be beneficial in decreasing problematic alcohol use for those who hold attitudes resistant to popular descriptive norms approaches to reducing alcohol use. Further, the results show that this normative message may be best conveyed through sources more proximal to the individual with an alcohol problem. Recent findings in social norms literature suggest that personalization of normative information is key to reducing problematic alcohol use (Lewis & Neighbors, 2006). However, these studies limit their definition of “personalization” to meaning a side-by side comparison of normative information to the individual’s current drinking practices and beliefs. By increasing personalization to include the conveyance of injunctive norms messages (i.e., showing of disapproval) by proximal referents (e.g., friends, romantic partners etc.), it is

possible that social norms approaches to reducing problematic alcohol use by students could be strengthened.

The results of this study bolster and expand upon findings of previous studies on the effectiveness of injunctive norms to influence those who drink to consume alcohol in a healthier manner. Promoting a more accurate social norm that illuminates disapproval toward problematic alcohol use may help those who are resistant to descriptive normative messages (see Rimal & Real, 2003; Thombs et al., 2004, 2007). For those who hold a negative attitude toward perceived censure that focuses attention on the amount of alcohol consumed a normative message that conveys disapproval as opposed to a decreased amount of alcohol to consume may be more effective.

Additionally, the current study highlights the need to understand the context in which the social norms message is being delivered. As has been shown, there is a strong possibility that the reaction toward the social norms message may differ dependent upon who delivers the normative message. This finding is not unique (see Neighbors et al., 2008); however, this study does well in showing the vast difference that can occur in response to a social norms message dependent upon who delivers the message and how it is delivered. Future studies might investigate the utility of enlisting the aid of proximal referents of those who engage in heavy drinking, providing these people with psychoeducational materials and brief training on appropriately conveying injunctive normative messages to those they know who drink to excess.

Conclusion

This study showed that when compared to descriptive approaches to censuring alcohol use, those censored with an injunctive approach were more likely to report lower

alcohol use. This injunctive norms approach to censuring problematic alcohol use may be beneficial compared to a more descriptive approach to censuring. Additionally, the study has shown that this injunctive approach is more likely to be related to lower alcohol use even when the person being censured holds a negative attitude toward being censured. By increasing the use of injunctive normative messages into the more popular descriptive normative interventions it is possible that social norms interventions may become more effective. Also, by expanding “personalization” of normative information to include the use of proximal referents in delivering normative information, social norms approaches to reducing problematic alcohol use may be strengthened. Finally, though most published social interventions utilize a descriptive norms approach to reducing alcohol use, the context in which the intervention should be well assessed as this “one size fits all” approach to intervention may lead to less-than-desirable results (Wechsler et al., 2003).

CHAPTER 4
A PROCESS EVALUATION OF AN ONLINE
SOCIAL NORMS INTERVENTION

Abstract

Online social norms approaches to decreasing problematic alcohol use by students have been shown to effectively reduce alcohol use. This process evaluation of an online social norms approach details difficulties encountered in the recruitment of participants and the delivery of normative information using online means. Specifically, the evaluation reviews problems encountered in recruitment using unsolicited email invitations, problems providing sufficient incentives for continuing participation, possible difficulties with capturing data online, and how history effects may influence drinking within a student population. Recommendations for future implementation of social norms interventions are provided.

Introduction

Social norms interventions have become popular approaches to reducing problematic alcohol use on college campuses (Lewis & Neighbors, 2006). Unfortunately, not all of these approaches have been successful, or as successful as possible. When an intervention that has empirical support does not achieve its purposes, an evaluation of the intervention is merited. The following is a process evaluation of a less-successful online social norms intervention that was implemented at Utah State University from October 2008 to April 2009. Of interest are four key issues that had an important/significant

problematic impact on the study outcomes: study recruitment through online means, ineffective/inefficient use of incentives, the manner in which data was captured on the server, and specific history effects.

Background

In an effort to attenuate the many negative consequences of problematic alcohol use, colleges and universities have implemented various programs to reduce problematic drinking by students. The programs implemented by institutions vary in type and efficacy in reducing alcohol use by students. Among these interventions, social norms approaches have shown promise in reducing student alcohol use (Borsari & Carey, 2000; Collins et al., 2002; Mattern & Neighbors, 2004). Social norms research suggests that students tend to overestimate the amount of alcohol that other students consume (Baer et al., 1991). In addition, students tend to overestimate the extent to which other students endorse excessive alcohol use as being acceptable. Interventions that provide accurate normative data, in an attempt to correct these misperceptions, have been shown to effectively decrease problematic alcohol use (Agostinelli et al., 1995; Baer et al., 2001). Thus, students with accurate information have been shown to be less likely to drink up to a fallacious norm.

Certain approaches to conveying social norms information, especially those that use a small group setting, appear to be effective in transmitting normative information. For approaches that do not present the normative data in person, the need to increase exposure and understanding of the purpose of the social norms approaches is a point of concern (Thombs & Hamilton, 2002). Various methods have been utilized to convey

accurate information about alcohol use to college students in social norms interventions. Those conducting interventions have used multimedia campaigns, small group seminars and meetings, information sent through the mail, and computer and online means to convey the normative material. Published articles resulting from these studies have supported the use of many of these interventions. Of all the social norms approaches, those that have been able to ensure exposure to normative material that is personalized appear to be most effective.

Researchers utilizing massive multimedia campaign approaches to social norms interventions have reported multiple difficulties. These problems have included difficulties in conveying a normative message that is easily understood as well as being able to personalize the normative message (Thombs et al., 2004). Social norms approaches that have been successful have included components such as the ability to adequately expose participants to the normative message (Gomberg et al., 2001; Perkins et al., 2005), the use of multiple types of normative information (Borsari & Carey, 2001), and have delivered the information in a manner that compares the normative use of alcohol to the individual's use (Kypri et al., 2004). This ability to personalize information appears to be a key component in influencing individuals using social norms approaches to decreasing alcohol use (Lewis & Neighbors, 2006).

However, unlike many multimedia campaigns, many studies employing personalized normative material have often included a fairly rigorous pre-screening of possible participants in order to only get those that meet the desired criteria (Lewis & Neighbors, 2007; Neighbors et al., 2004). Additionally, these programs have included incentives that make this approach less appealing due to the increased cost. Successful

interventions have reported incentives ranging from \$40 (Neighbors et al., 2004) to \$150 per student (Lewis et al., 2007). The increase in time, energy, and money needed for a school to run a social norms intervention in a manner that is keeping with the empirical evidence (e.g., screenings to gain the specific population, offered incentives to continue participation and therefore exposure to materials) may dissuade some schools from utilizing this approach, or worse, the schools may utilize an approach that may not be right for the particular campus culture. This “one size fits all” approach appears to have taken place on many college campuses with less-than desirable results (Wechsler et al., 2002).

The current paper is a process evaluation of a randomized control trial social norms intervention on college alcohol use at a large, public university in the intermountain west of the United States. The intervention was developed to address concerns of ease of implementation and cost-effectiveness that appears to be lacking in many of the newer, effective approaches to intervention. An easy-to-implement approach to social norms interventions was designed using the empirical evidence from multiple studies (Cox & Bates, in press). The approach utilized online means similar to previous studies in order to reduce the amount of work needed to create and implement the approach. Unlike many other interventions of this type, participants were not prescreened. While incentives were offered for participation, these were minimal (e.g., raffled \$10 gift card or \$10 cash) and throughout most of the intervention these were offered through a raffle and therefore participants were not guaranteed an incentive for their participation.

While there is empirical support for the utility of social norms approaches to intervention for problematic alcohol use, there are also many environments wherein this approach may be harmful. The current study was needed due to the unique environment that is presented at the studied university. Relative to national averages, student alcohol use at the studied university is a relatively low base rate event. Of the 1,060 students who responded to the survey, 197 (18.6%) reported using alcohol in the past year, and 117 (59.7%) reported that they drink more than once a month. While this low-use environment is conducive to less-frequent alcohol use, for many of those who do drink, their style of alcohol use is problematic. Of those who reported consuming alcohol, 65 (33%) reported binge drinking within the past two weeks, a practice known to increase the probability of negative events occurring to students who drink in this manner (Wechsler et al., 2001). The severe effects of problematic alcohol use on the campus upon which the study occurred were seen in the Fall 2008 semester when a student died of alcohol poisoning following a hazing ritual that was part of being initiated into a fraternity.

Summary of Intervention

Intervention Overview

Need for intervention. Prior to the planning of the intervention, a preliminary study was undertaken to assess the relationship between social normative influences and alcohol use. The study used an online questionnaire that investigated the relationship between drinking and perceptions of alcohol use by friends, the average student, and the average student who drinks. Results suggested that there was a strong positive

relationship between alcohol use by friends and personal use, and a moderately positive relationship between the average student who drinks and personal use. Thus, as perceptions of alcohol use by friends and the average student who drinks increased, so did personal alcohol use. The study also showed that perceptions of use by the average student had either no relationship, or a moderate negative relationship. Thus, as endorsed beliefs of the average student's alcohol decreased, personal alcohol use increased.

Previous university-wide social norms interventions for alcohol use had used the average student as a comparison group for the campaign (e.g., posters stating that 95% of students either do not drink or consume four or less drinks per drinking occasion). No formal evaluation of the university's social norms intervention is known to have taken place.

Intervention description. With the knowledge about the unique relationship between normative influences and alcohol on this campus, a social norms intervention was designed that would have the greatest likelihood of gaining the desired results. Due to limited funds, a computer-based approach, similar to that used by Lewis and Neighbors (2006) and Kypri et al. (2004) was used to control costs. The study used a mixed randomized-repeated design to determine the effectiveness of the intervention in decreasing alcohol use among students in the experimental group compared to students in the control group. Unlike previous studies, recruitment, intervention, and follow-up would all take place online. Thus this study would not only address the effectiveness of the intervention, but would also test the effectiveness of an intervention that was delivered solely using online means. This approach served to minimize costs, maximize the number of students that would be exposed to the intervention, and offered the ability

to personalize the intervention component based upon student response style on earlier parts of the questionnaire.

Timeline and overview of the completed intervention. The intervention was conducted at three times. Time 1 consisted of randomly assigning students into control or experimental groups, inviting students to participate by email, collection of preintervention data, and exposure to the social norms intervention for those assigned to the experimental group. These steps were completed solely using online means. Of the 5,000 students solicited for participation during the first stage, 1,060 (21.2%) participants completed the survey (see Table 4.1).

After a break of 9 weeks, the postintervention survey (Time 2) was made available online at the same URL as before. Invitations for participation were sent to those in the experimental and control groups who had endorsed any alcohol use in the past year, resulting in 197 email invitations being sent. This first email for the postintervention survey led to 68 (34.5% of those solicited; 64% of those who eventually responded) completed surveys in three days. A second follow-up email was sent, leading to 14 completed surveys in 9 days (7.1% of those solicited; 13.1% of those who eventually responded). Finally, the remaining 115 potential participants who had responded at Time 1 and had not yet responded at Time 2 were sent an email offering them an assured \$5 if they would participate by completing the 5-minute survey. Additionally, the email requested that they participate in the third and final round of data collection that would be held approximately two months later. This led to the completion of 25 surveys (12.7% of those solicited during Time 2; 23.4% of those who eventually completed the survey at Time 2) in 3 days. Again, after being available for a total of 8

Table 4.1

Timeline of Intervention, Including Response Rates

	Email invitations sent	Number of completed surveys	Percentage of eventually completed surveys by time
Time 1 (1,060 completed surveys)			
First email (Days 1-2)	5,000	586	55.3
Second email (Days 3-6)	4,414	243	22.9
Third email (Days 7-11)	4,171	231	21.8
Third email (Days 12-15)	--	0	0
Time 2 (107 completed surveys)			
First email (Days 1-3)	197	68	64.0
Second email (Days 4-12)	129	14	13.1
Third email (Days 13-15) ^a	115	25	23.4
Third email (Days 16-20)	--	0	0
Time 3 (57 completed surveys)			
First email (Days 1-14)	107	57	100

^aThis email contained a guaranteed \$.00 incentive for completing the survey.

days after the last email was sent, the postsurvey was made unavailable. A screening of the server's logs showed that again, no attempts had been made to access the survey during the last 5 days of the survey being available. In total, 107 (54.3%) surveys were completed during Time 2 of the 197 solicited participants.

The follow up (Time 3) began approximately 9 weeks later. For this survey, only a raffle of prizes was mentioned. This led to 57 completed surveys in the 2 weeks that the survey was available, with 50 (87.7%) being completed in the first 2 days. Of the 25 who had received the \$5.00 payment for their participation on the previous survey, 15 (60%) completed the final survey.

Preparation for the Intervention

Preparation for the intervention was fraught with difficulties and delays. While

preparatory procedures had been well-planned, these plans were constantly adapted once contact with personnel from various departments was made. For instance, the initial timeline for the commencement of the intervention was postponed due to difficulties gaining access to student email addresses, and difficulties obtaining permission to then send unsolicited email invitations to the students.

Initial preparation for the intervention included obtaining the email addresses of 5,000 full-time students who were taking classes at the university's main campus. This number represented approximately one quarter of students who met these criteria. Next, arrangements were made with the university's instructional technology department (IT) to send out this amount of personalized email. This consisted of conversing through email with one of the managers of the IT Department. Throughout this process, the manager of the IT department referred to the mailings as "spam" and derogated the process of sending unsolicited email to students. In retrospect, this attitude was an ominous sign of the reception the invitation likely met once delivered to the students. Next, several test trials were run to ensure that the email had the greatest likelihood of being delivered to each recipient's inbox and not be flagged as spam or junk mail. These tests had a 100% success rate of delivering the email to the inbox on several types of accounts (e.g., the university's email account, gmail, yahoo, hotmail, others). These accounts used their respective default spam filters. Finally, the draft of the solicitation email was prepared (see Appendix C) and distributed using an online bulk-mail utility provided by the university.

Difficulties in Intervention Implementation

Conducting any intervention can be difficult. The use of online means to conduct an intervention adds another layer of complication to intervention implementation. The nature of problems encountered in the social norms intervention being evaluated can be classified into four broad categories. These are presented in order of perceived impact they had on the overall success of the intervention. The first category involved effective targeting of the intervention to potential participants who meet criteria for a low-base rate behavior. The second category consisted of the nature of incentives used to solicit participation as well as the manner in which these incentives were offered. The third category involved the way that data were captured on the server. Finally, the fourth category was concerned with history effects in relation to an alcohol-related fatality that occurred shortly after the first stage of the intervention had been completed.

The need for an evaluation of the process became readily apparent shortly after the initial email solicitation for the survey was sent. Responses to the survey flooded the server during the first two days following the solicitation; however, after that there was an abrupt break with very few surveys being completed after this initial period. Additionally, of those who had completed the survey (including those who reported no alcohol use), only 0.06% met criteria for problematic alcohol use.

Need for Targeted Interventions

Campus culture. The purpose of the intervention was to measure the effectiveness of a social norms intervention on a campus where alcohol use, relative to the campus as a whole, was not a normative behavior. Previous studies of the campus

(USU, 2008) had illustrated this fact. The majority of students attending the university (approximately 86%) identify themselves as belonging to The Church of Jesus Christ of Latter-day Saints, a religion that proscribes the use of alcohol. It is believed that this adherence to the tenets of the religion is causal to the low-base rate of use and the subsequent descriptive norm that relatively few students on this campus consume alcohol.

Low base rate. Due to the low base rate of problematic alcohol use by students at this university, the use of an approach that did not specifically target those in need of intervention for recruitment into the study was problematic. Studies of interventions for low base-rate behaviors tend to utilize a recruitment process that targets in-tact groups that are at risk for the problematic behavior. For example, interventions for suicide may recruit those hospitalized for depression and/or suicidality (Motto & Bostrom, 2001), or those who have experienced hypomanic episodes in addition to previous suicidal behaviors (Bryan, Johnson, Rudd, & Joiner, 2008). In research on low base-rate substance use such as heroin abuse, participants tend to self-select into the intervention by presenting for treatment at a clinic (Bell et al., 2007; Ferri, Davoli, & Perucci, 2006). These more focused approaches may serve to increase response rates as the topic of the intervention is very salient to those in the targeted sample.

By recruiting participants in-person, the researchers were able to identify those students who met inclusion criteria and inform them on the nature of the study. The study being evaluated defined a group for intervention (those who met criteria for binge drinking) but failed to specifically target this group for recruitment efforts. By soliciting approximately one quarter of the general student body, the initial response rate was bound to be lower than desired. Additionally, the use of electronic means used for

recruitment as opposed to a personal introduction and explanation of the research likely had an impact on the number of people exposed to the solicitation (i.e., actually read the email), as well as the number who were both exposed and understood that the solicitation was a legitimate request for research participation. A personal presentation would better accomplish these two requirements than do repeated emails advertising the research project

Complicating the effects stemming from the low base rate was the use of a mixed randomized-repeated design to study relatively infrequent behaviors. The loss of approximately one half of participants who meet the specified criteria to the control group greatly decreased the investigators ability to determine whether effects of the intervention were statistically and/or clinically significant. A case study or the use of multiple baselines may have better served to capture the effects of the intervention for these relatively rare events (Barlow, Nock, & Hersen, 2008).

Stigmatized behavior. In addition to being a low base-rate behavior, and partially due to the relatively low rate of alcohol use in this environment, alcohol consumption is a stigmatized behavior at this university. Previous studies have shown decreases in willingness to participate in activities such as research that are associated with a behavior that is stigmatized (Cook & Nunkoosing, 2008; Schmalz, Kerstetter, & Anderson, 2008). One possibility for the decreased willingness to participate may stem from a desire to not be associated with the stigmatized behavior. This desire to not be associated with the stigmatized behavior may give rise to deliberate or nondeliberate avoidance of stigmatized stimuli (Corrigan & Penn, 1999). Additionally, with a low base-rate behavior that is not only stigmatized in the environment, but is also censured by the

majority of the population and the university, there is the likelihood that the survey will be perceived as having ulterior motives to support the majority's stance against the stigmatized behavior. Multiple studies on social norms approaches to decreasing alcohol use have shown that the purpose behind an intervention is a concern for students, and that their willingness to participate in the study as well as their willingness to believe the presented normative material is limited (Rimal & Real, 2003; Thombs et al., 2004, 2007).

The current study attempted to measure stigmatized behaviors using an unsolicited email invitation that included an official statement that the email and study were approved by the university. This may have served to decrease belief in the stated purpose of the study, which was simply to gain a better understanding of alcohol use in a low-use environment. Because the study originated from the university, perceptions of the motives behind the survey may have been skewed. While efforts were not made to contact nonresponders, this sentiment that the survey was being used to tell people how to use alcohol was apparent in multiple replies to open-ended questions that were contained in the survey. When asked why they had or had not censured a friend for problematic drinking, five (3%) of those who reported drinking stated that those running this study should not impose their moral beliefs on others, even though advice on frequency, quantity, or appropriateness of alcohol use was never given.

The low response rate obtained during the first stage of the intervention proved to be detrimental to the study. A response rate of 21% renders the representativeness of the sample to the university's population questionable. Unfortunately, a comparison of those who did and did not respond could not be made. The only contact information available for all participants were the email addresses obtained from the university's registrar's

office, and these people were not responding to email. In an effort to determine representativeness, the demographics obtained from participants were compared to those of the university.

In addition to the mass email sent to recruit participants, a more targeted approach was also attempted. This targeted approach consisted of presenting the opportunity to participate in the study to 31 students who had been referred to a university-run alcohol abuse program resulting from a violation of the university's drug and alcohol code. Participation in the social norms portion of the program was not mandatory and none of the participants elected to participate. Because the university's alcohol program is mandatory subsequent to a violation of rules, these individuals represent a group that has been coerced into participation and, dissimilar to those in low base-rate drug trials, have not shown personal motivation to seek treatment.

Use of Incentives

Previous studies. Many social norms studies on alcohol use have been successful in recruiting reliable research participants. Larimer et al. (2001) targeted a specific demographic known to have difficulties with alcohol use, incoming fraternity pledges. This approach likely helped to increase the rate of response; however, the authors only mention the number of fraternities that declined participation and do not give a true response rate of those who were originally solicited for possible participation. Of those that initially elected to participate, 71% followed through and completed the first round of data collection. Due to the lack of information about the targeted sample, the only true response rate that can be obtained from the report is between Time 1 and Time 2 data collection points (75%), and this percentage does not give any information concerning

the number of pledges participating versus those who declined to participate. In addition to narrowing the focus of the intervention onto an at-risk group, the researchers provided \$100 per fraternity house to participate, as well as \$20 per pledge, per round of data collection. This led to approximately \$6,800 in incentives being paid for two rounds of data collection. While effective at maintaining the continued participation of the originally obtained sample, this method is expensive.

Similarly, in testing the effectiveness of a computer-based social norms intervention, Neighbors et al. (2004) recruited students through psychology classes. The researchers only took those who reported previous binge drinking. Because not all students reported their drinking histories, the actual response rate for their study (all heavy drinkers in the psychology classes vs. those who participated) could not be reported. However, 252 (52%) of the 481 students who met criteria were recruited. The researchers reported a response rate of 66% at Time 1, but that number only includes those who met criteria and reported interest in being in the study. At Time 2, the number of participants fell to 198 (41.2% of the original 481 students who met criteria).

Lewis and colleagues (2007) focused their social norms intervention on incoming freshmen whose drinking was problematic, but not life-endangering. Participants were obtained from an orientation class that contained approximately one half of the incoming freshmen class. From this group 245 students met the specified criteria, and all completed the initial survey/intervention. Of these students 230 (93.9%) completed the follow up survey at Time 2, and 209 (85.3%) completed the survey at Time 3. Incentives for the study consisted of a \$50 payment per student, per time of participation. In all, approximately \$34,200 was spent on incentives for this intervention. By focusing

recruitment efforts on a well defined, and very select group of students, and offering a very high rate of incentive, the researchers were able to procure and maintain a high response rate for their study. While the first step of targeting a well-defined group for intervention is within the grasp of many intervention researchers, the second step of providing incentives may make the effective offering of social norms interventions far too costly for many researchers and universities.

Current study. The incentives used to entice prospective participants to complete the survey/intervention initially consisted of the offer for free iTunes songs. The initial email with this incentive (Time 1) led to 586 of the total 1,060 (55.3% of the total received; 11.7% of those solicited) completed surveys in the first 2 days. A follow-up email was sent after two days of running the survey. The second email invitation for participation included the same incentive offered in the first email and led to 243 completed surveys in 4 days (22.9% of the total received, 0.05% of those solicited). Due to the lower-than-expected response rate, the incentives were changed to include gift certificates for places including the university's bookstore and Amazon.com, as well as including the option to receive cash. This led to 231 surveys being completed in 4 days (21.8% of the total received, 0.05% of those solicited). The survey/intervention remained available for 8 days after the third and final email invitation was sent, and was then made unavailable to the public. A screening of the server's logs after the survey/intervention was taken down showed that no attempts had been made to access the survey/intervention during the last 4 days of availability. In total, 1,060 (21.2%) participants completed the survey of the 5000 originally solicited for participation during Time 1 (see Table 4/1).

Incentive research. Previous research on the utility of incentives to increase participation in completing surveys suggests that alternative approaches to the ones utilized may have increased the response rate. First, the initial email that was sent to recruit students for participation mentioned a raffle of iTunes songs. No mention of an alternative prize or cash reward was included in the original solicitation. A recent study on the difference in response rates on an online survey for those who received \$5 cash versus a \$5 gift certificate for Amazon.com found that receiving the cash led to a significantly higher rate of responding (57%) than did the receipt of the gift certificate (40%; Birnholtz, Horn, Finholt, & Bae, 2004). Both response rates were far higher than the rate received in the current study. This may be attributed to the fact that participants in the Birnholtz et al. study (2004) received the incentive as part of the request to participate. The current study merely offered the chance at a prize through a raffle. In a study on the difference between incentives that were guaranteed versus raffled, a higher rate of response was found for those who were guaranteed an incentive (80-86%) as opposed to offering a raffle (78%; Goritz, 2004). Unlike the current survey, participants in the study by Goritz (2004) had previously self-selected to be a part of this study after seeing it advertised on various websites, and incentives were therefore an addition to many participants' internal motivation to participate. Finally, in a study similar to the current study, unsolicited emails were sent to 2,109 potential participants offering the possibility of receiving a \$20 gift certificate. The researchers obtained 5 responses for a 0.24% response rate (Koo & Skinner, 2005). Unlike the current study, the participant pool consisted of an online health community, and the advertisement may have been viewed as traditional spam and not a legitimate offer to participate in research.

Summary of incentive use. Previous studies have shown that incentives can be effectively used to recruit participants and maintain engagement in intervention efforts. Unfortunately, the incentives used by these previous studies are very costly and may not be practical for those looking to implement social norms research. Next, previous studies have recruited participants in-person, allowing researchers to effectively communicate the incentives for participation. The study under investigation relied upon email solicitations to convey incentive information and is unlikely to have been read by all those solicited for participation. Finally, previous successful interventions have been able to assure participants of an incentive for participation; which was something that the study under investigation was not able to do.

Data Capture

Another possible issue was that the commercially available software used to create the survey did not capture survey data unless the survey had been fully completed (i.e., the participant clicked on the “submit” button at the end of the survey). To determine whether students were only partially completing the survey the server’s logs were thoroughly reviewed. The number of new sessions that hit on the website were counted and compared to the number of completed surveys. The discrepancy amounted to 61 hits on the server, which is not likely to have impacted the statistical results in a significant manner. Further, it was not possible to determine whether a person who had discontinued a session or had only viewed the informed consent page had completed the survey at a later time.

In an attempt to rule out delivery problems, a test of the delivery mechanism was again performed, using different email accounts. Again, there was a 100% success rate

with all email being delivered to the recipients' inboxes while using default account settings. Thus it was concluded that for those who left their spam filters on the default settings, there was a high probability that the solicitation was received. However, there was no way to know if the email was viewed, or whether the accounts were being monitored by the students.

History Effects

History, as a threat to the internal validity of a study, occurs when uncontrolled-for variables that have the ability to produce changes in the dependent variable are present between the beginning of treatment and the posttest (Shadish, Cook, & Campbell, 2002). In the study under evaluation, the 10-week and 20-week time periods between the presentation of the intervention and the two postintervention data collection times made history effects a concern. For the study of student alcohol use, changes in university alcohol policies, simultaneous interventions conducted by different departments within the university, or a tragic alcohol-related event are all possibilities that could account for changes in drinking as measured by the posttest. Unfortunately, 16 days after the intervention was made available, there was an alcohol-related fatality that involved several students and two Greek organizations. The incident gained a lot of press from the university's newspaper as well as local and state-wide newspapers and newscasts (Ortiz, 2009; USU, 2008). Due to the ubiquitous nature of the news coverage, it is likely that all students in both control and experimental groups were exposed to the incident. Because of this, it is not possible to distinguish between the effects of the intervention and the effects of the campus fatality.

For both the control group and the experimental group a significant decrease in alcohol use was found during the first posttest, which occurred approximately 9 weeks after the fatality. Students in the experimental group averaged 5.61 drinks per week prior to intervention (Time 1), and averaged 4.90 drinks per week at Time 2. Those in the control condition averaged 6.81 drinks per week at Time 1, and averaged 5.08 drinks per week at Time 2. While the primary effect of drinks per week significantly decreased in both conditions ($F_{2,105} = 9.56, p < .005$), the interaction was not significant, $F_{2,105} = .019, p > .05$, suggesting that the intervention was not effective in decreasing alcohol use. At the 20-week follow-up, using those for whom data was collected during all three data collection times ($n = 50$) the findings were similar with the notable difference that the control group had resumed drinking quantities (6.65 drinks per week) similar to those measured at Time 1 (prior to the death on campus) and those in the experimental group reported consuming quantities (4.95 drinks per week) similar to the decrease amount of alcohol use measured at Time 2. The main effect of decreased drinking was again found to be significant, $F_{2,48} = 4.96, p < .025$, and the interaction approached significance, $F_{2,48} = 2.64, p = .082$.

The results obtained between Time 1 and Time 2 may indicate that the intervention was not effective in decreasing alcohol use, as significant decreases in use by the experimental group were accompanied by significant decreases in use by the control group. The difference may be due to natural fluctuations in alcohol use by university students. However, and critically, these results may also reflect the impact of the highly publicized alcohol-related death. No known studies have looked at the effects of alcohol use after an alcohol-related death on a university campus. Thus it may be that the

resultant across-the-board decreases in use were due to this event, and that this phenomenon masked the impact of the intervention. Support for this may be obtained from the differences between alcohol use between Time 2 and Time 3. Time 2 data collection occurred approximately eight weeks after the death, and during a time when press coverage of the death and resultant court cases was fairly frequent. The Time 3 data collection occurred approximately 17 weeks after the death, and there was noticeably less press coverage of the incident. From Time 2 to Time 3, the control group increased their rate of drinking to quantities similar to those measured at Time 1. The experimental group maintained the decreased use of alcohol similar to the amounts reported at Time 2. Again, this may suggest that the intervention did have an impact, but that the initial impact (Time 1 to Time 2) was masked by the effects of the alcohol-related death on campus. Unfortunately, due to the diminished number of respondents, the representativeness of the sample to the general student population is questionable at best.

Miscellaneous Problems

Other issues affecting response rate included, three requests to stop sending email, two returned emails (after the initial email) stating that the users had banned email from us, and one email from a student who was having technical difficulties with his computer and therefore could not complete the survey. After troubleshooting with the student and multiple failed attempts to recreate the problem on different computers the student was advised to use a different computer.

Summary and Conclusions

The current project aimed to decrease problematic alcohol use among college

students at a university where the normative use of alcohol is low. The intervention consisted of the provision of personalized normative information about personal alcohol use as compared to the use of alcohol by other students who drink. The project attempted to conduct recruitment and intervention using only online means. Recruitment using only unsolicited email was detrimental to the project and resulted in a low response rate to the initial and subsequent participation invitations.

In addition to the problems experienced by online recruitment, and sample representativeness, a highly publicized alcohol-related student death may have impacted the results of the study. There is some evidence that the death may have decreased alcohol use, or at least reports of alcohol use in the weeks following; however, the impact may have been time-limited as rates of alcohol use by the control group returned to preintervention levels at follow up. Alcohol use by the experimental group did not experience this return to preintervention levels and a marked difference by group was seen for those participating in the final round of data collection.

The first conclusion that can be drawn from this evaluation is that recruitment for a social norms intervention for problematic alcohol use is likely to be less-effective if only online means are used to invite participants. While there is support for computer-based communication for normative data (Neighbors et al., 2004) the recruitment stage of the intervention presents a significant problem. Recruitment methods that appear to be most effective include the in-person presentation of information about the study and subsequent recruitment. While an email solicitation for participation may prove to be a time-effective addition to initial in-person recruitment, solely relying on email appears to be less-effective at best.

The second conclusion that may be drawn from this study is that raffled incentives appear to be less-effective in gaining and maintaining interest in research participation. This finding bolsters previous work on the subject of incentive effectiveness. The use of raffled incentives is at best, less-effective than an assured incentive (Goritz, 2004) and may have no significant difference on rates of response compared to no incentive (Goritz & Wolff, 2007).

Next, while the developers of the study took great care to avoid utilizing a “one size fits all” approach (Wechsler et al., 2002), the use of popular methods including mass sampling from the population, and the use of a randomized sample instead of a case-study approach suggest that Wechsler’s warning was not sufficiently heeded. Narrowing recruitment for the study onto a specific group (e.g., fraternity members/pledges, those with a history of binge drinking), and changing the design to better accommodate for a low base rate behavior may have led to an improved response rate and greater generalizability of the findings.

Recommendations

Conveying social norms messages using online or computer-based approaches have been shown to be effective (Kypri et al., 2009; Neighbors et al., 2004). These studies were able to use computer-based interventions to effectively deliver a personalized social norms intervention. Unfortunately, these studies either suffered from a low response rate or used included expensive incentives for participation. Economically, it appears more cost-effective to define and target smaller at-risk groups for social norms interventions. This may keep costs down, increase the number of

students who are willing to engage in the intervention, and therefore may be an effective and efficient means of decreasing problematic alcohol use.

Additionally, introduction of the social norms intervention and recruitment is likely to be more successful if done in-person as opposed to using an unsolicited email invitation. In-person invitations appear to be more effective, are less likely to be dismissed without some amount of consideration and allow the investigators to address any concerns that may keep possible participants from engaging in the intervention. This approach also allows investigators to know how many students received the invite and makes tracking dropout rates possible.

Next, the use of a guaranteed incentive in the form of money is recommended. The current study bolsters previous work that suggests gift certificates may not provide the same magnitude of incentive as a guarantee of money (Goritz, 2004).

There are many commercially available programs that can be used to create online surveys. Additionally, there are several businesses that can be used to host online surveys. Care should be taken when choosing the manner in which the survey will be conducted. Obvious concerns center on security, ease of use, and ease of access. Not-so-obvious concerns can be found in how data are captured. The survey in this study did not capture data unless the entire survey was completed. Thus partial completions were lost. Because the servers were local, the logs could be accessed to ascertain how many times the site was visited, but this did not give any indication on how much of the survey, if any, was completed before the survey was discontinued. Fortunately, many businesses offer software or online services that capture all responses, even if the respondent closes his/her browser after only partially completing the survey.

Finally, not all history effects can be well-controlled for. In the case of the current intervention the death of a student due to alcohol poisoning was something that affected all participants. However, reporting the outcomes of studies in the context of these extremely rare events may give insight into the influence such tragedies have on students' alcohol use.

CHAPTER 5

SUMMARY AND CONCLUSIONS

Social norms interventions appear to be effective approaches to decreasing alcohol use among college students. Additionally, the utility of online means for capturing accurate normative data, conveying this data, and effectively implementing an intervention are well-supported. However, as noted in many failed social norms interventions, various facets of the campus and the intervention need to be accounted for and intervention efforts need to be adjusted accordingly. First, campus culture needs to be carefully taken into consideration. Failure to account for the norms of the campus and/or the norms of the subpopulation targeted for intervention has been linked to less-effective social norms interventions (Rimal & Real, 2003; Thombs et al., 2004). Second, personalization of the normative message has been shown to be an important factor. Third, the use of both injunctive and subjective norms may be more effective than targeting at-risk populations using just one type of norm.

Online implementation of social norms interventions appears to be both an effective and efficient means of conveying social norms concerning alcohol use in this low-use environment (see Chapter 2, *Impact of an Online Social Norms Intervention Targeting Alcohol Use in a Low-Use Environment*). Online interventions can be tailored to fit the campus culture, they can provide personalized feedback almost instantaneously, and they can convey both injunctive as well as subjective norms. However, the use of online means to conduct a social norms intervention should be approached with caution. First, the use of online means to recruit students into an intervention appears to be less effective. Unsolicited email invitations, while simple to produce and distribute appear

less likely to be read or responded to (Koo & Skinner, 2005). Second, the software used to create an online survey or the company contracted to host the survey should be scrutinized. In this study, the ability to capture partially completed surveys and the ability to measure the number of respondents who accessed the survey but did not complete it were not in place. Both the use of email to recruit participants and the inability to track partial responders led to an undesirably low rate of response to the online intervention.

Social norms interventions may be conveyed by an individual and viewed as a form of censure (Etcheverry & Agnew, 2008). As shown in Chapter 3 (Censuring and Social Norms: The Impact of Attitudes, Referent Proximity, and Type of Norm Conveyed on Alcohol Use), whether a person holds a positive, negative or neutral attitude toward being censured may determine how he or she reacts to a social norms intervention. Additionally, reactions to being censured may differ by the referent censuring (e.g., friend, family member). Attempting to determine each individual's likely reaction to social norms messages from multiple referents would serve to complicate intervention implementation and does not appear practical. Fortunately, there is evidence that the form of censure, either injunctive or descriptive may determine the person's reaction. The previous study has shown that injunctive norms are less likely to be rejected than are descriptive norms. This finding bolsters previous findings suggesting that injunctive norms are an effective component of social norms interventions (Borsari & Carey, 2003). Future interventions might benefit by adding an injunctive normative component to address attitudinal differences, as these norms are more readily accepted than are descriptive norms. By including both injunctive and descriptive norms it may be possible to avoid paradoxical effects seen in previous social norms interventions.

Previous studies have shown, and this study supports the notion that successful implementation of social norms interventions requires increased motivation by students to interact well with the normative data (see Chapter 4, Process Evaluation of a Social Norms Intervention for Alcohol Use in a Low-Use Environment). Unfortunately, many of the studies that have been effective in changing social norms and decreasing alcohol use have also been very expensive (Larimer et al., 2001; Lewis et al., 2007). Future research should focus on ways of increasing motivation for engagement in social norms interventions specifically, and all online studies or interventions in general, that is more cost efficient. This would make effective social norms approaches a more viable option for colleges looking for an empirically supported approach to reducing problematic alcohol use on their campuses.

Finally, these papers emphasize the need to consider campus culture in implementing social norms interventions. Relationships between personal alcohol use, perceived alcohol use by others, and perceived appropriateness of alcohol use by others differ dependent upon the proximity of the referent group used (e.g., close friends vs. the average student) and attitudes toward being censured by a given referent group. These relationships appear to differ by campus and therefore need to be well-studied before social norms interventions are conducted. Failure to do so may lead to less-effective interventions or interventions that actually increase problematic alcohol use.

REFERENCES

- Agostinelli, G., Brown, J. M., & Miller, W. R. (1995). Effects of normative feedback on consumption among heavy drinking college students. *Journal of Drug Education*, 25, 31-40.
- Agostinelli, G., & Grube, J. W. (2002). Alcohol counter-advertising and the media: A review of recent research. *Alcohol Research & Health*, 26, 15-21.
- Ajzen, I., & Fishbein, M. (1973). Attitudinal and normative variables as predictors of specific behavior. *Journal of Personality and Social Psychology*, 27, 41-57.
- Baer, J. S., Kivlahan, D. R., Blume, A. W., McKnight, P., & Marlatt, G. A. (2001). Brief intervention for heavy-drinking college students: 4-year follow-up and natural history. *American Journal of Public Health*, 91, 1310-1316.
- Baer, J. S., Stacy, A., & Larimer, M. (1991). Biases in the perception of drinking norms among college students. *Journal of Studies on Alcohol*, 52, 580-586.
- Barlow, D. H., Nock, M., & Hersen, M. (2008). *Single case experimental designs: Strategies for studying behavior for change* (3rd ed.). Needham Heights, MA: Allyn & Bacon.
- Bell, J., Shanahan, M., Mutch, C., Rea, F., Ryan, A., Batey, R., Dunlop, A., & Winstock, A. (2007). A randomized trial of effectiveness and cost-effectiveness of observed versus unobserved administration of buprenorphine-naloxone for heroin dependence. *Addiction*, 102, 1899-1907.

- Birnholtz, J. P., Horn, D. B., Finholt, T. A., & Bae, S. J. (2004). The effects of cash, electronic, and paper gift certificates as respondent incentives for a web-based survey of technologically sophisticated respondents. *Social Science Computer Review*, 22, 355, 362.
- Borsari, B., & Carey, K. B. (2000). Effects of a brief motivational intervention with college student drinkers. *Journal of Consulting and Clinical Psychology*, 68(4), 728-733.
- 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, 331-341.
- Bryan, C. J., Johnson, L. G., Rudd, M. D., & Joiner, T. E. (2008). Hypomanic symptoms among first-time suicide attempters predict future multiple attempt status. *Journal of Clinical Psychology*, 64, 519-530.
- Carey, K. B., Borsari, B., Carey, M. P., & Maisto, S. A. (2006). Patterns and importance of self-other differences in college drinking norms. *Psychology of Addictive Behaviors*, 20, 385-393.
- Chawla, N., Neighbors, C., Lewis, M. A., Lee, C. M., & Larimer, M. E. (2007). Attitudes and perceived approval of drinking as mediators of the relationship between the importance of religion and alcohol use. *Journal of Studies on Alcohol and Drugs*, 68, 410-418.

- Cho, H. (2006). Influences of norm proximity and norm types on binge and non-binge drinkers: Examining the under-examined aspects of social norms interventions on college campuses. *Journal of Substance Use, 11*, 417-429.
- Cialdini, R. B. (2003). Crafting normative messages to protect the environment. *Current Directions in Psychological Science, 12*, 105-109.
- Cialdini, R. B., Reno, R. R., & Kallgren, C. A. (1990). A focus theory of normative conduct: Recycling the concept of norms to reduce littering in public places. *Journal of Personality and Social Psychology, 58*, 1015-1026.
- Cialdini, R. B., & Trost, M. R. (1998). Social influence: Social norms, conformity and compliance. In D. T. Gilbert, S. T. Fiske, & G. Lindzey (Eds.), *The handbook of social psychology, Vols. 1 and 2* (4th ed., pp. 151-192). New York, NY: McGraw-Hill.
- Clapp, J. D., Lange, J. E., Russel, C., Shillington, A., & Voas, R. B. (2003). A failed norms social marketing campaign. *Journal of Studies on Alcohol, 64*, 409-414.
- Cohen, B. H. (2002). Calculating a factorial ANOVA from means and standard deviation. *Understanding Statistics, 1*, 191-203.
- Collins, S. E., Carey, K. B., & Sliwinski, M. J. (2002). Mailed personalized normative feedback as a brief interention for at-risk college drinkers. *Journal of Studies on Alcohol, 63*, 559-567.
- Collins, R. L., Parks, G. A., & Marlatt, G. A. (1985). Social determinants of alcohol consumption: The effects of social interaction and model status on the self-administration of alcohol. *Journal of Consulting and Clinical Psychology, 53*, 189-200.

- Cook, K., & Nunkoosing, K. (2008). Maintaining dignity and managing stigma in the interview encounter: The challenge of pain-for participation. *Qualitative Health Research, 18*, 418-427.
- Corrigan, P. W., & Penn, D. L. (1999). Lessons from social psychology on discrediting psychiatric stigma. *American Psychologist, 54*, 765-776.
- Cox, J. M., & Bates, S. C. (in press). Referent group proximity, social norms, and context: Alcohol use in a low-use environment. *Journal of American College Health.*
- Engs, R. C., Hanson, D. J., Gliksman, L., & Smythe, C. (1990). Influence of religion and culture on drinking behaviours: A test of hypotheses between Canada and the USA. *British Journal of Addiction, 85*, 1475-1482.
- Etcheverry, P. E., & Agnew, C. R. (2008). Romantic partner and friend influences on young adult cigarette smoking: Comparing close others' smoking and injunctive norms over time. *Psychology of Addictive Behaviors, 22*, 313-325.
- Faulkner, K. K., Alcorn, J. D., & Garvin, R. B. (1989). Prediction of alcohol consumption among fraternity pledges. *Journal of Alcohol & Drug Education, 34*, 12-20.
- Ferri, M., Davoli, M., & Perucci, C. A. (2006). Heroin maintenance treatment for chronic heroin-dependent individuals: A Cochrane systematic review of effectiveness. *Journal of Substance Abuse Treatment, 30*, 63-72.
- Festinger, L. (1954). A theory of social comparison processes. *Human Relations, 7*, 117-140.
- Fishbein, M. (1979). A theory of reasoned action: Some applications and implications. *Nebraska Symposium on Motivation, 27*, 65-116.

- Gomberg, L., Schneider, S. K., & DeJong, W. (2001). Evaluation of a social norms marketing campaign to reduce high-risk drinking at the University of Mississippi. *American Journal of Drug & Alcohol Abuse, 27*, 375.
- Goritz, A. S. (2004). The impact of material incentives on response quantity, response quality, sample composition, survey outcome and cost in online access panels. *International Journal of Market Research, 46*, 327-345.
- Goritz, A. S., & Wolff, H. (2007). Lotteries as incentives in longitudinal web studies. *Social Science Computer Review, 25*, 99-110.
- 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*, 259-279.
- Hornik, R., Maklan, D., Cadell, D., Barmada, C., Jacobsohn, L., Henderson, V., ... Steele, D. (2003). *Evaluation of the National Youth Anti-Drug Media Campaign: 2003 report of findings*. National Institute on Drug Abuse, National Institutes of Health, Department of Health and Human Services, Contract No. N01DA-8-5063, December 22, 2003, pp. 4-15.
- Jacobsohn, L. S. (2007). *Explaining the boomerang effects of the national youth anti-drug media campaign*. Ann Arbor, MI: ProQuest Information & Learning, US.
- Kaysen, D., Neighbors, C., Martell, J., Fossos, N., & Larimer, M. E. (2006). Incapacitated rape and alcohol use: A prospective analysis. *Addictive Behaviors, 31*, 1820-1832.

- Koo, M., & Skinner, H. (2005). Challenges of internet recruitment: A case study with disappointing results. *Journal of Medical Internet Research*, 7. doi: 10.2196/jmir.7.1.e6.
- Kypri, K., Hallett, J., Howat, P., McManus, A., Maycock, B., Bowe, S., & Horton, N. J. (2009). Randomized controlled trial of proactive web-based alcohol screening and brief intervention for university students. *Archives of Internal Medicine*, 169, 1508-1514
- Kypri, K., Saunders, J. B., Williams, S. M., McGee, R. O., Langley, J. D., Cashell-Smith, M. L., & Gallagher, S. J. (2004). Web-based screening and brief intervention for hazardous drinking: a double-blind randomized controlled trial. *Addiction*, 99(11), 1410-1417.
- Larimer, M. E., Turner, A. P., Anderson, B. K., Fader, J. S., Kilmer, J. R., Palmer, R. S., & Cronce, J. M. (2001). Evaluating a brief alcohol intervention with fraternities. *Journal of Studies on Alcohol*, 62(3), 370-380.
- Leadley, K., Clark, C. L., & Caetano, R. (1999). Couples' drinking patterns, intimate partner violence, and alcohol-related partnership problems. *Journal of Substance Abuse*, 11, 253-263.
- Lewis, M. A., & Neighbors, C. (2006). Social norms approaches using descriptive drinking norms education: A review of the research on personalized normative feedback. *Journal of American College Health*, 54, 213-218.
- Lewis, M. A., & Neighbors, C. (2007). Optimizing personalized normative feedback: The use of gender-specific referents. *Journal of Studies on Alcohol and Drugs*, 68, 228-237.

- Lewis, M. A., Neighbors, C., Oster-Aaland, L., Kirkeby, B. S., & Larimer, M. E. (2007). Indicated prevention for incoming freshmen: Personalized normative feedback and high-risk drinking. *Addictive Behaviors, 32*, 2495-2508.
- Mattern, J. L., & Neighbors, C. (2004). Social norms campaigns: Examining the relationship between changes in perceived norms and changes in drinking levels. *Journal of Studies on Alcohol, 65*, 489-493.
- Motto, J. A., & Bostrom, A. G. (2001). A randomized controlled trial of postcrisis suicide prevention. *Psychiatric Services, 52*, 828-833.
- Nagoshi, C. T., Wood, M. D., Cote, C. C., & Abbit, S. M. (1994). College drinking game participation within the context of other predictors of alcohol use and problems. *Psychology of Addictive Behaviors, 8*, 203-213.
- Neighbors, C., Larimer, M. E., & Lewis, M. A. (2004). Targeting misperceptions of descriptive drinking norms: Efficacy of a computer-delivered personalized normative feedback intervention. *Journal of Consulting & Clinical Psychology, 72*, 434-447.
- Neighbors, C., Lee, C. M., Lewis, M. A., Fossos, N., & Larimer, M. E. (2007). Are social norms the best predictor of outcomes among heavy-drinking college students? *Journal of Studies on Alcohol and Drugs, 68*, 556-565.
- Neighbors, C., Lewis, M. A., Bergstrom, R. L., & Larimer, M. E. (2006). Being controlled by normative influences: Self-determination as a moderator of a normative feedback alcohol intervention. *Health Psychology, 25*, 571-579.

- Neighbors, C., O'Connor, R. M., Lewis, M. A., Chawla, N., Lee, C. M., & Fossos, N. (2008). The relative impact of injunctive norms on college student drinking: The role of reference group. *Psychology of Addictive Behaviors, 22*, 576-581.
- Ortiz, M. (2009). USU student dies; alcohol may be involved. Retrieved from <http://www.abc4.com/content/news/slc/story/USU-Student-dies-alcohol-may-be-involved/Y00ybx93ZkKNGQKTSVRTsA.csp>
- Perkins, H. W., & Berkowitz, A. D. (1986). Perceiving the community norms of alcohol use among students: Some research implications for campus alcohol education programming. *International Journal of the Addictions, 21*, 961-976.
- 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.
- Presley, C. A., & Meilman, P. W. (1994). Development of the core alcohol and drug survey: Initial findings and future decisions. *Journal of American College Health, 42*, 248-256.
- Rimal, R. N., & Real, K. (2003). Understanding the influence of perceived norms on behaviors. *Communication Theory, 13*, 184-203.
- Roberts, L. J., Leonard, K. E., Wilsnack, R. W., & Wilsnack, S. C. (1997). *Gender differences and similarities in the alcohol and marriage relationship*. Piscataway, NJ: Rutgers Center of Alcohol Studies.

- Rogers, T. B., Kuiper, N. A., & Kirker, W. S. (1977). Self-reference and the encoding of personal information. *Journal of Personality and Social Psychology, 35*, 677-688.
- Schmalz, D. L., Kerstetter, D. L., & Anderson, D. M. (2008). Stigma consciousness as a predictor of children's participation in recreational vs. competitive sports. *Journal of Sport Behavior, 31*, 276-297.
- Schroeder, C. M., & Prentice, D. A. (1998). Exposing pluralistic ignorance to reduce alcohol use among college students. *Journal of Applied Social Psychology, 23*, 21150-2180.
- Schultz, P. W., Nolan, J. M., Cialdini, R. B., Goldstein, N. J., & Griskevicius, V. (2007). The constructive, destructive, and reconstructive power of social norms. *Psychological Science, 18*, 429-434.
- Shadish, W. R., Cook, T. D., & Campbell, D. T. (2002). *Experimental and quasi-experimental designs for generalized causal inference*. Boston, MA: Mifflin.
- Sher, K. J., Bartholow, B. D., & Nanda, S. (2001). Short- and long-term effects of fraternity and sorority membership on heavy drinking: A social norms perspective. *Psychology of Addictive Behaviors, 15*, 42-51.
- Singleton, R. A., Jr. (2007). Collegiate alcohol consumption and academic performance. *Journal of Studies on Alcohol and Drugs, 68*, 548-555.
- Stamper, G. A., Smith, B. H., Gant, R., & Bogle, K. E. (2004). Replicated findings of an evaluation of a brief intervention designed to prevent high-risk drinking among first-year college students: Implications for social norming theory. *Journal of Alcohol & Drug Education, 48*, 53-72.

- Steffian, G. (1999). Correction of normative misperceptions: An alcohol abuse prevention program. *Journal of Drug Education, 29*, 115.
- Tabachnick, B. G., & Fidell, L. S. (2007). *Experimental designs, Using ANOVA*. Belmont, CA: Duxbury.
- Tampke, D. R. (1990). Alcohol behavior, risk perception, and fraternity and sorority membership. *NASPA Journal, 28*, 71-77.
- Thombs, D. L. (2000). A test of the perceived norms model to explain drinking patterns among university student athletes. *Journal of American College Health, 2*, 75.
- 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*, 61-68.
- Thombs, D. L., & Hamilton, M. J. (2002). Effects of a social norm feedback campaign on the drinking norms and behavior of Division I student-athletes. *Journal of Drug Education, 32*(3), 227.
- Thombs, D. L., Olds, R. S., Osborn, C. J., Casseday, S., Glavin, K., & Berkowitz, A. D. (2007). Outcomes of a technology-based social norms intervention to deter alcohol use in freshman residence halls. *Journal of American College Health, 6*, 325-332.
- Thompson, K. M. (2007). Alcohol-related legal infractions and student retention. *Journal of Studies on Alcohol and Drugs, 68*, 689-696.
- Utah State University. (2008). *Biennial survey*. Retrieved from <http://www.usu.edu/swc/assessments/biennial.cfm>

- Voisine, S., Parsai, M., Marsiglia, F. F., Kulis, S., & Nieri, T. (2008). Effects of parental monitoring, permissiveness, and injunctive norms on substance use among Mexican and Mexican American adolescents. *Families in Society, 89*, 264-273.
- Wechsler, H., & Kuo, M. (2000). College students define binge drinking and estimate its prevalence: Results of a national survey. *Journal of American College Health, 49*, 57-64.
- Wechsler, H., Lee, J. E., Gledhill-Hoyt, J., & Nelson, T. F. (2001). Alcohol use and problems at colleges banning alcohol: Results of a national survey. *Journal of Studies on Alcohol, 62*, 133-141.
- Wechsler, H., Lee, J. E., Kuo, M., Seibring, M., Nelson, T. F., & Lee, H. (2002). Trends in college binge drinking during a period of increased prevention efforts. *Journal of American College Health, 50*, 203-217.
- Wechsler, H., Nelson, T. F., Lee, J. E., Seibring, M., Lewis, C., & Keeling, R. P. (2003). Perception and reality: A national evaluation of social norms marketing interventions to reduce college students' heavy alcohol use. *Quarterly Journal of Studies on Alcohol, 64*, 484-494.
- Wechsler, H., Seibring, M., Liu, I., & Ahl, M. (2004). Colleges respond to student binge drinking: Reducing student demand or limiting access? *Journal of American College Health, 52*, 159-168.
- 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.

APPENDICES

Appendix A:
Presented Normative Information

Presented Normative Information

Descriptive Quantity

Previously, you reported your perception that the average USU student who drinks consumes (*reported perceived quantity*) drinks per drinking occasion.

The average USU student who drinks reported consuming (*normative quantity*) drinks per drinking occasion.

Previously you reported that you consume (*reported quantity of drinks*) drinks per drinking occasion.

Appendix B:
Censure Items

Please indicate whether or not the following is true about your experiences with a Significant Other (spouse, girlfriend/boyfriend):

1. My significant other told me that drinking wasn't okay
2. My significant other told me to stop drinking
3. My significant other told me to reduce my drinking
4. My significant other has hinted that drinking was not okay

Please indicate whether or not the following is true about your experiences with a Friend:

1. A friend told me that drinking wasn't okay
2. A friend told me to stop drinking
3. A friend told me to reduce my drinking
4. A friend has hinted that drinking was not okay

Please indicate whether or not the following is true about your experiences with a Family Member (parent, sibling, other):

1. A family member told me that drinking wasn't okay
2. A family member told me to stop drinking
3. A family member told me to reduce my drinking
4. A family member has hinted that drinking wasn't okay

In the past 3 months have any of the following stated that you should stop drinking or reduce your drinking: parents, friends, other students, siblings, other (who?)_____

Appendix C:
Sample Email Invitations

Initial Email Invitation

Subject: [Important] Survey and raffle of iTunes songs

USU Student,

This email is being sent to you as an invitation to participate in a study which has been approved by Utah State University. By selecting the link provided below you will be taken to an online survey.

For your time we are offering you the opportunity to enter your name into a week of daily raffles. **Each day 50 iTunes songs (or a prize of equal value if requested) will be raffled.** So those who enter the raffle today (Wednesday) will have their names entered into all 7 raffles consisting of 50 iTunes songs each.

Confidentiality:

We understand your desire to keep your personal information private and have implemented the following procedures.

Once you click on the link provided below you will be taken to a webpage which will ask for the identification number provided at the bottom of this email. This unique number can not be linked back to you by anyone except the principal investigator (Dr. Scott Bates). This has been done to ensure the confidentiality of your information.

If you have any questions please feel free to email me: Email.address@usu.edu

Your Unique Identification Number: #####

[Link to Survey](#)

If clicking on the link fails to take you to the webpage, please copy the link and paste it into your web-browser.

Sample Email Follow-up Invitation

Subject: [Important] 5 minute Follow-up Survey and Raffle

USU Student,

Thank you for your previous participation in this ongoing study on alcohol use at USU.

By selecting the link below you will be taken to another survey that should take less than 5 minutes to complete. Your continued participation in this study is greatly appreciated and again we are offering you the opportunity with cash and gift-cards. Each day gift cards and cash will be raffled to those who have completed the survey.

Confidentiality:

We understand your desire to keep your personal information private and have implemented the following procedures. Once you click on the link provided below you will be taken to a webpage which will ask for the identification number provided at the bottom of this email. This unique number can not be linked back to you by anyone except the principal investigator (Dr. Scott Bates). This has been done to ensure the confidentiality of your information.

If you have any questions please feel free to email me:

Email.address@usu.edu

Your Unique Identification Number: #####

<https://webaddresshere.edu>

If clicking on the link fails to take you to the webpage, please copy the link and paste it into your web-browser.

CURRICULUM VITAE

Jared M. Cox

606 Matheny Cut
Martinez, GA 30907
Home: (435) 890-8746
Email: jared.cox2@us.army.mil

Graduate Degrees

- 08/04-Present ***Ph.D.***
Combined Clinical, Counseling, School, Psychology
Utah State University, Logan, Utah
Dissertation: A social norms approach to college student alcohol
use: Drinking in a low-use environment
GPA: Accumulative- 3.87
- 08/04-12/07 ***M.S.***
Combined Clinical, Counseling, School, Psychology
Utah State University, Logan, Utah
Thesis: A social norms approach to understanding college alcohol
use: Drinking in a low-use environment
GPA: Accumulative – 3.76

Undergraduate Education

- 08/00-06/04 ***B.A. Psychology***
Magna Cum Laude, Ohio University, Athens, Ohio
GPA: Accumulative – 3.82; Major (Psychology) – 3.86
- 07/02-04/03 ***Undergraduate Research Assistant***
Supervisor: Stephen Patterson, Ph.D.
Responsibilities included: Investigating the physiological effects
of stress on cardiovascular reactivity and intra/extra-cellular
hydration levels
Ohio University, Athens Ohio

Clinical Experience

- 01/05-05/05 ***Student Therapist, Practicum***
Utah State University Community Psychology Clinic, Logan, Utah

Supervisor: M. Scott DeBerard, Ph.D.

Responsibilities included: Intakes, assessments, report writing and individual therapy

08/05-05/06

Student Therapist, School Psychology Practicum

Utah State University Community Psychology Clinic, Logan, Utah

Supervisors: Gretchen Gimpel-Peacock, Ph.D.; Clint Field, Ph.D.

Responsibilities included: Intakes, assessments, report writing and individual therapy for children ages 3-12 years of age

09/05-06/06

Student Therapist, Clinical Practicum

Brigham City Community Hospital, Cardiovascular Rehabilitation Clinic, Brigham City, Utah

Supervisor: M. Scott DeBerard, Ph.D.

Responsibilities included: Intakes, assessments, report writing and individual therapy for those who had recently experienced a major cardiac event

07/06-07/07

Student Therapist, Counseling Psychology Practicum

Utah State University Student Health Center, Logan, Utah

Supervisor: M. Scott DeBerard, Ph.D.

Responsibilities included: Intakes, assessments, report writing, consultation with physicians and nurses and individual therapy for university students and their families

06/07-07/08

Student Therapist, Clinical Assistantship

Bear River Mental Health, Logan, Utah

Supervisor: Scott Blickenstaff, Ph.D.

Responsibilities include: Intakes, assessments, report writing and individual therapy for those covered by Medicaid and/or those with severe and persistent mental illness (SPMI)

08/07-07/08

Student Therapist, Clinical Assistantship at Cache County Jail

Bear River Mental Health, Logan, Utah

Supervisor: Scott Blickenstaff, Ph.D.

Responsibilities included: Intakes, assessments, report writing, individual therapy, and working in conjunction with medical staff and the local courts to provide mental health services for the 430 bed facility that housed both state and federal inmates

04/07-09/08

Student Therapist, Clinical Practicum

Utah State University Community Psychology Clinic, Logan, Utah

Supervisors: Susan Crowley, Ph.D.; Gretchen Gimpel-Peacock, Ph.D.

Responsibilities Included: Intakes, assessments, report writing and individual therapy for children and adults

- 09/08-05/09 **Student Therapist, Clinical Practicum**
 Utah State University Center for Persons with Disabilities, Logan,
 Utah
 Supervisor: Robert Cook, Ph.D.
 Responsibilities Included: Intakes, assessments, report writing, and
 working with a multi-disciplinary team to provide services for
 children and adults
- 10/09-Present Clinical Internship
 Dwight D. Eisenhower Army Medical Center (DDEAMC)
 Outpatient Behavioral Health Services, Fort Gordon, GA
 Director of Training: MAJ Monique McCoy, Ph.D.

Research Experience

- 07/06-06/07 **Research Assistant**
 Supervisor: Scott Bates, Ph.D.
 Aided in the creation of an on-line social norms intervention
 targeting problematic alcohol use by Utah State University
 students, administration of web-server, creation of on-line surveys
 and intervention tools
- 06/08-06/09 **Research Assistant**
 Supervisor: Michael Twohig, Ph.D.
 Aided in the analysis, and interpretation of data treating
 problematic sexual behaviors, scrupulosity, and religiosity.
 Provided Acceptance and Commitment Therapy (ACT) as part of a
 randomized control trial investigating the utility of ACT in treating
 clients with sexual compulsions

Publications and Presentations

- 04/08 Cox, J.M., & Bates, S.C. (2008). The role of religiosity and
 negativism dominance in social norms approaches to problematic
 alcohol use by college students. Poster presentation at the annual
 convention of the Rocky Mountain Psychological Association in
 Boise, ID.
- 05/08 Bates, S.C., & Cox, J.M. (2008). The impact of computer versus
 paper-pencil survey, and individual versus group administration,
 on self-reports of sensitive behaviors. *Computers in Human
 Behavior*, 24, 903-916.

- 11/09 Cox, J.M., Crosby, J.M., & Twohig, M.P. (2009). Scrupulosity and quality of life in a religious sample. Poster presentation at the annual convention of the Association for Behavioral and Cognitive Therapies in New York, NY.
- 12/09 Crosby, J., Cox, J.M., & Twohig, M.P. (2009). Viewing internet pornography: For whom is it problematic, how, and why? *Journal of Sexual Addiction and Compulsivity*, 16, 253-256.
- 05/10 Cox, J.M., & Bates, S.C. (In Press). Referent group proximity, social norms, and context: Alcohol use in a low-use environment. *Journal of American College Health*.
- 06/10 Twohig, M.P., Whittal, M.L., Cox, J.M., & Gunter, R. (2010). An initial investigation into the processes of change in ACT, CT, and ERP for OCD. *International Journal of Behavioral Consultation and Therapy*, 6, 67-83.
- 09/10 Cox, J.M., & Bates, S.C. (Under Review). A social norms approach to decreasing college student alcohol use in a low-use environment
- 9/10 Cox, J.M., & Bates, S.C. (Under Review). A process evaluation of an online social norms intervention.

Teaching Experience

- 06/06-05/09 ***Instructor, Psychology 1010: Introductory Psychology***
 Responsibilities included: sole instructor, lecturing, development of course material, grading, and office hours, class sizes ranged from 19 to 175 students
 A total of 5 courses taught during summer session 2006, spring semester 2007, summer session 2007, fall semester 2008, and spring semester 2009

Military Experience

- 10/94-01/95 ***Basic Training/Advanced Individual Training (AIT), OSUT 13B, Cannon Crewmember***
 Ft. Sill, Oklahoma
- 05/00-06/00 ***Primary Leadership Development Course (PLDC)***
 Eighth Army NCO Academy, South Korea

- 09/00-06/04 *Army Reserve Officer Training Corps (ROTC)*
Green-to-Gold Scholarship Recipient
Ohio University, Athens Ohio
- 06/03-07/03 *National Advanced Leadership Camp (NALC)*
Ft. Lewis, Washington
- 07/09-09/09 *Officer Basic Leadership Course (OBLC)*
Ft. Sam-Houston, Texas

Professional Memberships

- 2003-Present Phi Beta Kappa Honor Society
- 2009-Present Association for Contextual Behavioral Science (ACBS)