EXAMINING SELF-MONITORING AS A MODERATOR OF THE EFFECTIVENESS OF
SOCIAL NORMS AND SELF-SCHEMA MATCHED MESSAGES FOR REDUCING BINGE
DRINKING AMONG COLLEGE STUDENTS

by

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B.A., University of Colorado at Colorado Springs, 2007

A THESIS

submitted in partial fulfillment of the requirements for the degree

MASTER OF SCIENCE

Department of Psychology
College of Arts and Sciences

KANSAS STATE UNIVERSITY
Manhattan, Kansas

2009

Approved by:

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Abstract

Self-monitoring was examined as a moderator of the effectiveness of persuasive messages for reducing college student binge drinking. Low self-monitors tend to be influenced by their personal values and attitudes, while high self-monitors tend to be influenced by the behavior of those around them. Via a website simulation, college students were presented with one of three types of anti-binge drinking messages: a self-schema message, which highlighted how responsible drinking is consistent with the message recipient's personal values and attitudes; a social norms message, which explained that most college students drink less than one might think they do; or a control message, which stated in general terms that people can experience a variety of problems from binge drinking. Overall intended drinking behavior in the self-schema message condition was almost identical to that of the social norms message condition, both of which were lower than drinking intentions in the control message condition. When presented with a self-schema matched message, low self-monitors intended to drink less alcohol than did high self-monitors, but these means were not significantly different. However, high self-monitors intended to drink significantly less than did low self-monitors when presented with a social norms message. The results suggest that self-schema matched messages may be effective at reducing binge drinking for most students, and that social norms messages may be equally as effective but only for high self-monitors.

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Acknowledgements

I would like to thank my advisor, Dr. Laura Brannon, for her guidance and contribution, as well as the other members of my supervisory committee, Dr. Richard Harris and Dr. Brenda McDaniel, for their feedback and suggestions. I would also like to thank my family, friends, and colleagues for all of their support and encouragement.

CHAPTER 1 - Introduction

Overview

The current study was designed to examine how self-monitoring moderates the potential effectiveness of two forms of messages intended to reduce college binge drinking. First, research on the prevalence of binge drinking and its consequences are presented. Descriptions of the two message types being tested and a review of the related literature as well as a review of the self-monitoring literature is presented. The two forms of interventions examined in the current study were a social norms approach, which emphasizes peers' drinking behavior, and a self-schema matching approach, which reflects the individuals' personality and values. Considering the individual difference variable of self-monitoring, which classifies individuals as being more strongly influenced either by their social environment or by their personal attitudes and values (Becherer & Richard, 1978; Snyder, 1974; Snyder & Gangestad, 1986), it was hypothesized that the effectiveness of the binge drinking interventions above would be moderated by an individual's level of self-monitoring. Specifically, it was expected that a social norms drinking intervention would be more effective than a self-schema matched intervention for high self-monitors (people who are particularly influenced by their social environment), while the reverse was expected for low self-monitors (people who are particularly influenced by their own attitudes and values). Given the widespread use of the internet by college students today, and the ease and efficiency of distributing tailored health messages to large groups of people with the use of the internet, the current study tested the binge drinking intervention messages with the use of a website simulation. Research that has tested the internet as a tool for dispersing health information (including information about drinking alcohol) is reviewed. Finally, the methodology, data analysis results, and a discussion of the results are presented.

Prevalence and Consequences of Binge Drinking

While college attendance may increase an individual's probability of being successful in his or her professional career, it brings with it an increased probability of engaging in problem alcohol drinking (Slutske, 2005; Wechsler, Lee, Kuo, Seibring, Nelson, & Lee, 2002). In the 1990s, results from the Harvard School of Public Health College Alcohol Study (CAS) Surveys (conducted in 1993, 1997, 1999, and 2001) produced an increased awareness of the prevalence of problem alcohol drinking across college campuses and the negative outcomes associated with this behavior. Specifically, binge drinking became labeled as "the single most serious public health problem confronting American colleges" (Wechsler, Dowdall, Maenner, Gledhill-Hoyt, & Lee, 1998). Binge drinking was previously defined as having five or more drinks on one occasion for both males and females. However, after examining sex differences in the effects of consuming five drinks of alcohol on one occasion, a sex-specific definition of binge drinking was established by Wechsler, Dowdall, Davenport, and Rimm (1995) as having at least four drinks on one occasion for females and at least five drinks on one occasion for males. Wechsler and colleagues (1995) found that when both males and females had consumed five drinks on one occasion, females were significantly more likely than males to experience certain alcohol-related problems. However, when females consumed four drinks on one occasion and males consumed five, the sexes were equally likely to experience certain alcohol-related problems. This gender-specific definition of binge drinking has been used in subsequent binge drinking research (e.g., Wechsler, Davenport, Dowdall, Moeykens, & Castillo, 1994; Wechsler et al., 1998; Wechsler, Lee, Kuo, & Lee, 2000; Wechsler et al., 2002) and was used in the current study.

In the most recent of the four CAS survey reports (i.e., Wechsler et al., 2002), which sampled students from over 100 colleges, 44.4% of the students reported engaging in binge

drinking, a rate similar to data collected from the surveys administered in previous years (Wechsler et al., 1994; Wechsler et al., 1998; Wechsler et al., 2000). Other large-scale studies have reported similar rates of college binge drinking (Douglas et al., 1997; Hingson, Heeren, Winter, & Wechsler, 2005; Johnston, O'Malley, Bachman, & Schulenberg, 2008). It is important to note that the prevalence of binge drinking is not consistent throughout the 18-25 year age group. Rather, binge drinking rates are higher for individuals in this age group who attend college than for those who do not (Hingson et al., 2005; Johnston et al., 2008; Slutske, 2005). More specifically, in a sample of 19-21 year olds, those attending college reported higher rates of drinking on a weekly, monthly, and yearly basis, and they reported higher rates of weekly binge drinking than did their peers not attending college (Slutske, 2005). Similarly, data from the Missouri Adolescent Female Twin Study revealed that among female twin pairs in which one twin attended college and the other did not, the college-attending twin was more likely to engage in binge drinking than the non-college-attending twin (Slutske et al., 2004).

Although the average rate of college students who engage in binge drinking appears to have not changed much over a decade, there have been changes in the percentages of different types of drinkers. The CAS classifies students in one of four ways: 1) abstainers—those who do not report drinking alcohol within the 12 months prior to being surveyed; 2) nonbinge drinkers—those who drink alcohol but do not report binge drinking in the two weeks prior to being surveyed; 3) occasional binge drinkers—those who report binging one or two times during the two weeks prior to being surveyed; and 4) frequent binge drinkers—those who report binging at least three times during the two weeks prior to being surveyed (Wechsler et al., 1994; Wechsler et al., 1998; Wechsler et al., 2000; Wechsler et al., 2002). On a good note, the percentage of students classified as abstainers increased from 1993 to 2001 (Wechsler et al., 2002). However,

during this same time period, there was also an increase in the percentages of students classified as frequent binge drinkers or students engaging in an "extreme drinking style" (i.e., drinking on 10 or more occasions in the past 30 days, getting drunk at least three times in the past 30 days, or reporting drinking to get drunk as an important reason for drinking; Wechsler et al., 2002). While it is good that there is a growing percentage of college students who abstain from drinking alcohol, among those who do drink, more and more of them are binge drinking more than once each week. Perhaps most alarming, though the percentage of frequent binge drinkers is growing, approximately only one fifth of students are classified as frequent binge drinkers, yet this group drinks two thirds of the alcohol consumed by college students (Wechsler et al., 2000).

The high rate of binge drinking among college students is of such great concern because of the numerous negative consequences that this behavior can have on a person's life. The CAS surveys include questions about how frequently students experience 12 alcohol-related problems: miss a class, get behind in school work, regret doing something, forget where one was and what was done, argue with friends, engage in irresponsible sexual behavior, damage property, get into trouble with the campus or local police, get hurt or injured, require medical treatment for an overdose, and drive after drinking (Wechsler et al., 1994; Wechsler et al., 1998; Wechsler et al., 2000; Wechsler et al., 2002). Between 1993 and 2001, the percentages of students who reported experiencing these problems either remained the same or increased. The number of students (about 20%) who reported experiencing five or more of these problems has remained steady since 1997, after a 4% increase from 1993 (Wechsler et al., 2002). The likelihood that students will experience the above alcohol-related problems appears to be dependent upon what type of drinkers they are. In a report of the data collected from the first CAS survey, compared to non-binge drinkers, those who were occasional binge drinkers were five times more likely to

experience five or more of the 12 alcohol-related problems listed above, while those who were frequent binge drinkers were 25 times more likely to experience the same number of problems (Wechsler et al., 1994). Similar comparisons have been found from subsequent CAS survey data (i.e., Wechsler et al., 1998; Wechsler et al., 2000).

While some of the alcohol-related problems examined in the CAS may have only mild, short-term effects, some alcohol related problems may have more serious and long-lasting consequences. Each year, approximately 600,000 college students suffer alcohol-related injuries; 17,000 die from alcohol-related unintentional injuries, including deaths from traffic accidents; and over 470,000 engage in irresponsible sexual behavior after consuming alcohol (Hingson et al., 2005). Some of the most alarming findings involve the prevalence of college students who report drinking and driving and riding in a vehicle driven by another student who was drunk. From the initial CAS survey, drinking and driving was reported by significantly more binge drinkers, especially frequent binge drinkers, than by non-binge drinkers (Wechsler et al., 1994). From 1993 to 2001, the number of students who reported riding in a vehicle driven by another student who was drunk increased significantly (Wechsler et al., 2002). The necessity to focus on the college student population in the attempt to reduce binge drinking is supported by the finding that driving under the influence of alcohol occurs at higher rates among college students (31%, or nearly 2.8 million students) than among their non-student peers (24%) (Hingson et al., 2005).

In an examination of the clinical consequences of problem drinking, Slutske (2005) reports that 19-21 year-olds attending college are significantly more likely than their non-college-attending peers to be diagnosed with alcohol abuse. Although college students were no more likely than their non-college attending peers to be diagnosed with alcohol dependence, they were more likely to report experiencing "tolerance and spending a great deal of time over a

period of a month obtaining, using, or getting over the effects of alcohol," which are two of the seven symptoms of alcohol dependence (Slutske, 2005, p. 324).

Not only can excessive alcohol consumption have a negative impact on the drinker, but it can also indirectly affect those who are physically and emotionally close to the drinker. Each year, more than 690,000 students are assaulted by another student who has been drinking alcohol, 97,000 of which are sexual assault or date rape cases (Hingson et al., 2005). The CAS surveys have investigated how frequently students who live on campus and are either non-binge drinkers or abstainers have experienced the following "secondhand effects" of alcohol use: being insulted or humiliated; having a serious argument and quarrel; being pushed, hit, or assaulted; having property damaged; having to take care of a drunken student; having study/sleep interrupted; experiencing an unwanted sexual advance; being a victim of sexual assault or date rape (Wechsler et al., 1994; Wechsler et al., 1998; Wechsler et al., 2000; Wechsler et al., 2002). The percentages of students who have reported experiencing each of these problems have been consistent across the four surveys (Wechsler et al., 2002). At all four survey times, the most commonly experienced secondhand effects were having study/sleep interrupted, having to take care of a drunken student, and being insulted or humiliated (Wechsler et al., 1994; Wechsler et al., 1998; Wechsler et al., 2000; Wechsler et al., 2002). More than half of the non-binge and abstaining students reported experiencing at least two of the secondhand effects (Wechsler et al., 2002). Additionally, the percentage of non-binge and abstaining students who experience secondhand effects of binge drinking has been found to be related to the binge drinking rate at their college or university. Results from the CAS surveys have consistently shown that non-binge and abstaining students living on campuses with high rates of binge drinking (i.e., campuses where more than 50% of students are binge drinkers), are more likely than non-binge and

abstaining students living on campuses with low rates of binge drinking (i.e., campuses where 35% or less of students are binge drinkers) to report experiencing the secondhand effects listed above (Wechsler et al., 1994; Wechsler et al., 1998; Wechsler et al., 2000).

The extreme outcomes that can result from binge drinking make it a major public health concern. It is even more alarming that this problematic health behavior is occurring at such high rates among young adults, particularly within the college student population.

Binge Drinking Reduction Interventions

Social Norms Technique

In response to the high rates of binge drinking on college campuses and the negative consequences that can result from it, the use of social norms messages has been one of the most popular intervention techniques used to reduce college binge drinking, with approximately half of U.S. colleges and universities having employed this strategy (Wechsler, Seibring, Liu, & Ahl, 2004). Social norms drinking interventions are based on findings regarding students' misperceptions of their peers' drinking behavior, as well as the relationship between these misperceptions and students' own drinking behavior. Specifically, college students have been found to overestimate the frequency of their peers' alcohol consumption (Perkins, Meilman, Leichliter, Cashin, & Presley, 1999). For example, Perkins et al. (1999) found that regardless of whether actual normative frequency of alcohol consumption at a college or university was *no use, yearly* (one to six times in a year)*, monthly* (once or twice in a month)*,* or *weekly* (one to three times in a week)*,* students most commonly estimated that their peers typically consume alcohol on a weekly basis. Although students tended to make inaccurate estimates of the frequency of their peers' alcohol consumption, they tended to overestimate this frequency more often than underestimate it. Specifically, at institutions where monthly alcohol use was the actual

normative behavior, only 6.5% of the students perceived this to be the norm, while 71%

perceived weekly drinking to be the norm (Perkins et al., 1999).

College students have also been reported to overestimate the *amount* of alcohol that their

peers consume (Perkins, Haines, & Rice, 2005; Polonec, Major, & Atwood, 2006). In a

nationwide study that surveyed 70,000 college students, 71% overestimated the median number

of drinks consumed by students at their university when they "'partied'/socialized," while only

15% underestimated the norm and 14% gave accurate estimates (Perkins et al., 2005).

Surprisingly, while students tend to overestimate how frequently and how much their peers

drink, they also tend to underestimate the amount of *binge drinking* that occurs and the level of

alcohol consumption that is considered problematic. In the 2001 CAS study, based on students'

reports of their alcohol consumption, approximately 23% would be classified as frequent binge

drinkers, but only 14% thought of themselves as heavy or problem drinkers (Wechsler et al.,

2002).

What is more important than the findings illustrating students' misperceptions of their

peers' and their own drinking behavior is the relationship that has been found between these

misperceptions and students' own actual drinking behavior. Students' perceptions of their peers'

behavior have been found to be a good predictor of their own drinking behavior later on (Miley

& Frank, 2006; Polonec et al., 2006; Sher, Bartholow, & Nanda, 2001). In fact, the number of

drinks that students perceive their peers to consume when they "party" has been found to predict

the students' own drinking behavior better than their peers' actual drinking behavior (Perkins et

al., 2005). The positive correlation between students' perceptions of their peers' drinking

behavior and their own suggests that students are attempting to match their behavior to (what

they perceive as) their peers' typical behavior. Thus, the goal of a social norms intervention is to

change actual drinking behavior by correcting the misperception of typical college student drinking behavior: if students' drinking behavior is influenced by how they believe their peers to be drinking, then they should drink less if they learn that their peers typically do not drink as much as they believe them to (Polonec, et al., 2006).

At institutions where social norms interventions have been implemented, the student population is first surveyed about their own drinking behavior and their perceptions of their peers' drinking behavior. The typical drinking behavior (e.g., the number of drinks consumed on one occasion) is calculated from students' self-reports, and this average is then reported in a social norms message that is commonly dispersed to the students through print media, such as the campus newspaper, posters, newsletter articles, dining hall table tents, and mailed greeting cards (Gomberg, Schneider, & DeJong, 2001; Johannessen, Collins, Mills-Novoa, & Glider, 1999; Polonec et al., 2006; Werch et al., 2000).

Some institutions have reported success with the social norms approach to both changing students' perceptions of their peers' alcohol consumption and reducing binge drinking on college campuses. For example, in a five year examination of binge drinking intervention strategies employed at Northern Illinois University, the percentage of students who perceived binge drinking to be normative drinking behavior among their campus peers decreased significantly after the implementation of a social norms intervention (Haines & Spear, 1996). More importantly, students' self-reported rates of binge drinking decreased significantly during the three years in which the social norms approach was implemented. Additionally, while the baseline rate of binge drinking on the NIU campus was not significantly different from the national binge drinking rate for that year (as reported by the Monitoring the Future study), binge

drinking rates for NIU were significantly lower than the national binge drinking rates for the years that the social norms approach was implemented (Haines & Spear, 1996).

Seeing the reports of positive results from NIU's use of a social norms intervention to reduce problem drinking, public health officials at the University of Arizona selected to use a social norms approach in their attempts to reduce heavy drinking at their campus (Johannessen et al., 1999). After implementation of a social norms drinking intervention at the University of Arizona, a significantly greater percentage of students believed four or fewer drinks to be the typical amount of alcohol consumption when their peers "party," and there was a significant decrease in the percentage of students who reported binge drinking (Johannessen et al., 1999). Additionally, implementation of the social norms approach was associated with a significant reduction in the percentage of students who reported both engaging in alcohol-related behaviors, such as driving after drinking alcohol, and experiencing alcohol-related problems, such as getting into a fight or argument, getting in trouble with campus police, doing something that is later regretted, being taken sexually advantage of, missing class, and doing poorly on a test or important project (Johannessen et al., 1999). Similar results showing changes in norm perceptions and actual drinking behavior have been found for other samples exposed to a social norms drinking intervention (e.g., Gomberg et al., 2001).

However, reports of success with social norms approaches have been questionable, and some research examining social norms interventions has suggested that this strategy may not be as effective as anticipated (Polonec et al., 2006; Wechsler et al., 2002; Wechsler et al., 2003; Werch et al., 2000). For example, a study testing the effectiveness of this method at a medium-sized Southern U.S. university found no overall reduction in heavy drinking among students who were exposed to a social norms anti-binge drinking message compared to those who did not

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receive the social norms message (Werch et al., 2000). A national examination of colleges and

universities using social norms interventions to reduce binge drinking on their campuses found

neither a significant decrease in binge drinking at these institutions nor a significant difference in

changes in drinking behavior between these institutions and institutions not using a social norms

intervention (Wechsler et al., 2003). While the previously discussed implementation of a social

norms approach at Northern Illinois University was reported to successfully reduce binge

drinking compared to both the baseline year when no intervention was used and to national binge

drinking rates, there have been criticisms of these results. The social norms interventions used at

Northern Illinois University and other institutions have been criticized for methodological flaws,

such as nonrandom assignment of students to study conditions, comparing interventions that

were implemented at different time points, comparing groups that differed prior to the

intervention, and sampling more heavily from certain groups, like those who were heavy

drinkers at baseline (Wechsler et al., 2003; Werch et al., 2000). Conversely, studies that have

been more methodologically sound have not found a positive effect of social norms interventions

(e.g., Werch et al., 2000).

Still, there may be hope for social norms interventions to reduce binge drinking.

Although Werch et al. (2000) did not find an effect of a social norms intervention on reducing

heavy drinking *overall*, they did find this intervention to be more effective for some students

than it was for others. The influence that the social norms intervention had on drinking behavior

was found to depend on what stage of initiating binge drinking the students were in. Those who

were contemplating heavy drinking and those who were regular binge drinkers seemed to be the

most influenced by the social norms messages, whereas those who were in a "preparation" stage

were less easily influenced (Werch et al., 2000). The current study examined the idea that social

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norms messages can be effective for certain types of people. Specifically, it examined how the effectiveness of the social norms intervention may depend on the individual difference variable self-monitoring, which classifies individuals on the basis of how strongly they are influenced by their social environment versus their personal attitudes and values (Becherer & Richard, 1978; Snyder, 1974; Snyder & Gangestad, 1986).

Self-Schema Matching Technique

One argument for why social norms binge drinking interventions have not consistently shown promising results is that they are too generalized and that personalized interventions would be more effective (Werch et al., 2000). Another approach, based on *schema correspondence theory* and the basis for the current study, examines the effectiveness of anti-binge drinking messages tailored to self-schema. "Self schemas are knowledge structures about the self that derive from past experience and that organize and guide the processing of the self-relevant information contained in the individual's social experiences" (Markus, 1983, p. 547). In other words, based on past behavioral experiences, individuals will think of themselves in certain ways (i.e., in terms of self-schemas), and will use this information to guide their behavior in future situations. One theory that draws on the importance of self-schemas in guiding behavior is *schema correspondence theory*. According to *schema correspondence theory*, "message persuasiveness is an increasing function of fit between the schemas of…the attitude object, the appeal, and the recipient" (Brannon & Brock, 1994, p. 175). In other words, a message about a behavior will be most persuasive when the schema associated with that behavior matches with the message recipient's self-schema.

Initial studies examining the effectiveness of persuasive messages tailored to self-schema have been in the context of advertising. The general methodology of such studies is to first

measure the participants' self-schemas with the use of four cards, each representing a different self-schema with four trait adjectives preceded by "I am…," a short descriptive paragraph incorporating the trait adjectives, and a graphic of individuals whose attire and depicted behaviors are reflective of the traits on the card. The four schema types identified by their trait adjective sets are Warm-Communicative-Compassionate-Feeling, Adventuresome-Skillful-Competitive-Spontaneous, Versatile-Wise-Conceptual-Curious, and Responsible-Dependable-Helpful-Sensible. The trait adjectives, descriptive paragraphs, and descriptions of the graphics associated with each schema appear in Appendix A. Participants are asked to identify the schema set that best represents them (Brannon & Brock, 1994), or in some cases, to rank the cards in order of being most descriptive to least descriptive of themselves (Brannon & McCabe, 2002; Brock, Brannon, & Bridgwater, 1990). The self-schema cards have been shown to be a reliable individual difference measure (Brannon & Brock, 1994). Research has demonstrated that large numbers of participants (i.e., over 8,000) have been able to easily select a card that they identify with, and construct validity of the cards has been established from comparisons of participants' responses to the cards and their responses to another measure of self-schema (Brock et al., 1990). Sometime after participants complete the card-ranking task, they are presented with a message about a consumer product, for example, that is either matched to the schema they identify most with or non-matched (i.e., tailored to the schema they identify with the least) (Brock et al., 1990; Brannon & Brock, 1994). For example, if an individual selects the adventuresome self-schema as being most representative of him or herself, then a message matched to that self-schema would emphasize how the product would allow the individual to be more adventuresome. On the other hand, if that same person identifies least with the responsible self-schema, then a non-matched message would emphasize how the product would enable that individual to better fulfill his or

her obligations and responsibilities. Finally, the influence of the message is measured. A typical measurement of message persuasiveness is the participants' attitudes toward the message product (Brock et al., 1990; Brannon & Brock, 1994).

Various consumer behavior research studies have demonstrated the effectiveness of self-schema matched messages. One test of *schema correspondence theory* showed that participants had more positive attitudes toward a consumer product (i.e., conditioner) if they received a persuasive message about the product that was matched to the participant's self-schema than if they received a message that was matched to the schema of the product (Brannon & Brock, 1994). Consumer messages matched to the recipient's self-schema have also been found to be more persuasive than non-matched messages—messages matched to the self-schema an individual identifies as least representative of him or herself (Brock et al., 1990). In one study, those who received a matched message had more favorable attitudes toward the message product (e.g., ski resort, shampoo, amusement park) than those who received a non-matched message. Brock et al. (1990) found further support for the use of self-schema matched messages in a field experiment with an initial sample of over 7,000 individuals who were former customers of a weight loss company. Participants were mailed the self-schema card ranking task, supposedly from a personality research group, and were asked to mail back their responses. Several months later, participants received in the mail an invitation that was either matched or not matched to their previously identified self-schema to renew their membership with the weight loss company and resume their diet. A larger percentage of membership renewal cards were returned from individuals who received an invitation matched to the self-schema they identified with the most, than from those who received an invitation matched to the self-schema they identified with the least (Brock et al., 2000).

Similar examinations of matched versus non-matched messages have been conducted on health-related topics. For example, Brannon and McCabe (2002) reported that participants who were informed of AIDS risk through a self-schema matched message expressed greater interest in obtaining more information about AIDS risk than did those who received a non-matched message. Most relevant to the current research is a study conducted by Pilling and Brannon (2007), which compared attitudes toward three types of anti-binge drinking messages: a control message, a social norms message, and a self-schema matched message. Overall, Pilling and Brannon found that college students had more positive attitudes toward self-schema matched messages discouraging binge drinking than they did toward a social norms message, which tended to be rated no better than a control message.

The current research also examined differences in the effectiveness of the three message types tested by Pilling and Brannon (2007). However, the current study also examined variation in message effectiveness as a function of self-monitoring, an individual difference variable which classifies individuals on the basis of whether they tend to be influenced by their social environment versus their personal attitudes and values (Becherer & Richard, 1978; Snyder, 1974; Snyder & Gangestad, 1986). It was anticipated that taking into account this additional person variable would provide more information about which types of messages (social norms versus self-schema matched) will be most effective for certain groups of students (high versus low self-monitors, respectively) in the effort to reduce college binge drinking.

Self-Monitoring

Pilling and Brannon's (2007) finding that self-schema matched messages appear to be more promising than social norms messages supports research that questions the effectiveness of social norms binge drinking interventions (e.g., Campo et al., 2003; Polonec et al., 2006;

Wechsler et al., 2003; Werch et al., 2000). However, research has not examined whether there are groups of individuals for which a social norms approach to reducing binge drinking may actually be just as effective, if not more so, than personalized strategies. The purpose of the current study was to fill this gap in the literature. Specifically, it examined how self-monitoring might moderate the effectiveness of social norms messages that discourage binge drinking compared to more personalized self-schema matched messages. As previously noted, self-monitoring is an individual difference variable that identifies individuals as being more strongly influenced either by their social environment or by their personal values and beliefs when making behavior-related decisions (Becherer & Richard, 1978).

"[T]he self-monitoring individual is particularly sensitive to the expression and self-presentation of others in social situations and uses these cues as guidelines for managing his [or her] own self-presentation and expressive behavior. In contrast, the non-self-monitoring person has little concern for the appropriateness of his [or her] presentation and expression, pays less attention to the expression of others, and monitors and controls his [or her] presentation to a lesser extent" (Snyder, 1974, p. 536).

Research in non-health-related areas has illustrated how the difference between low and high self-monitors is reflected in their attitudes. For example, DeBono (1987) tested two persuasive messages about institutionalization of the mentally ill. Some participants received a value-based message telling them that a separate group of people held the same values that the participants previously indicated as important in "guiding" their behavior, and that these values were associated with positive attitudes toward institutionalization of the mentally ill. Others received a peer attitude message indicating that the majority of the participants' peers held positive attitudes toward institutionalization of the mentally ill. DeBono found low self-

monitors' attitudes toward institutionalization of the mentally ill to be more strongly influenced by the value-based message, and high self-monitors' attitudes to be more strongly influenced by the peer attitude message. While DeBono's value-based messages may be similar to self-schema matched messages tested in the current study, the latter are more personalized. If the current study were to have followed DeBono's method, participants would have been informed that others who identify with the same self-schema as the participants, tend to hold certain attitudes toward binge drinking. The current study, however, used self-schema matched messages, which do not make any association between the participants' identities and others who think of themselves in similar ways. Rather, self-schema matched messages are more personalized in that they provide reasons for why the message recipients should not binge drink based on the type of person they identify as.

In a health-related area, research has examined how self-monitoring can moderate the relationship between subjective norms and behavioral intentions. Specifically, in an examination of tanning salon behavior, as self-monitoring increased, the relationship between subjective norms and behavioral intentions increased (Hillhouse, Turrisi, & Kastner, 2000). In other words, the higher someone was in self-monitoring, the more closely linked were their intentions to use a tanning salon to their beliefs that important others in their life thought they should utilize a tanning salon.

Additionally, in the research examining the effectiveness of self-schema matched persuasive messages in an advertisement setting, Brannon and Brock (1994) reported that low self-monitors tended to have more positive attitudes toward the message product than did high-self monitors. In regards to the current research, these findings suggest that college students who

are low self-monitors should have more positive attitudes than should high self-monitors toward self-schema matched anti-binge drinking messages.

While research has demonstrated the influence of self-monitoring on behavior as well as how it may moderate the influence of persuasive messages, it has not been examined as a moderator of the effectiveness of binge drinking interventions. This was the purpose of the current study.

The Internet as an Intervention Tool

Given its widespread use, the internet has recently been examined as a tool for dispersing health messages. It has been noted that dispersing health information over the internet is less costly and more efficient than using a paper-based intervention delivered via postal mail (Moore, Soderquist, & Werch, 2005). Today, it is not uncommon for colleges and universities to rely on email as the official form of communication between students, faculty, staff, and administrators. It is also typical for institutions to have computers accessible to all students, which ensures an opportunity to expose a large percentage of, if not all, students on a single campus to health information via the internet. Along with the convenience of being able to reach large groups of individuals via the internet, this method of exposure also allows for health information to be tailored to individual message recipients and for feedback to be provided much more easily and quickly than when using a paper-based method. The use of computers for testing health messages also provides the opportunity for immediate electronic storage of data, which reduces concern over data entry errors. Additionally, by distributing information and collecting responses via the internet, the cost of paper and mailing materials is almost, if not completely, eliminated, saving time and resources.

Some research has examined the potential of web-based intervention programs to reduce heavy alcohol consumption among college students. For example, Moore et al. (2005) compared the efficacy of an alcohol intervention program completed in either a paper-based or a web-based format. Participants in both intervention groups reported a reduction in binge drinking at posttest, but there was not a significant difference in reduction between the groups. Still, this result should not be taken to suggest that web-based interventions are no better than paper-based interventions. Other findings from the comparison of web-based and paper-based drinking intervention techniques suggest that web-based interventions may be preferable to paper-based interventions. For example, students were more likely to visit links to websites containing further information about responsible drinking and were more likely to complete posttest and evaluation measures if exposed to the internet-based intervention versus the paper-based intervention (Moore et al., 2005). Recipients of information about responsible drinking behavior have also reported a preference for receiving the information from an anonymous internet-based source than from a therapist via telephone, or from a self-help book (Koski-Jannes & Cunningham, 2001; Kypri, Saunders, & Gallagher, 2003).

Not only does research support the use of the internet as a tool for dispersing information about responsible drinking, but it also supports the use of using the internet to tailor the information to individuals. For example, Chiauzzi, Green, Lord, Thum, and Goldstein (2005) tested a website designed to encourage responsible drinking behaviors among college students. They compared a website that involved tailoring and motivational and skill-building interactive tools to a control website which contained only educational information and research-based articles presenting the negative effects of heavy alcohol consumption. In the interactive website, participants responded to questions about their beliefs about alcohol, their lifestyle (e.g., living

arrangement, Greek and athletic involvement), the risks they take when drinking alcohol, and the consequences they suffer as a result of drinking. Based on this information, students received a report of personal risk factors of alcohol consumption. The interactive website was found to be more effective than the control website at producing a rapid decrease in average daily alcohol consumption and the maximum amount of alcohol consumed daily. Additionally, students exposed to the interactive website gave higher ratings of satisfaction, thought the site did a better job at addressing college student health issues, and were more likely to indicate that they would recommend the site to a friend than were those exposed to the control website.

Given the time and money-saving advantages to using the internet to disperse health messages along with the positive results from research examining the effectiveness of internet-based alcohol interventions, the current study tested anti-binge drinking messages with the use of a website simulation.

Hypotheses

Findings from previous research clearly support the effectiveness of persuasive messages that are tailored to self-schema (Brannon & Brock, 1994; Brannon & McCabe, 2002; Brock et al., 1990). More important, examination of self-schema matched persuasive messages to potentially be used in binge drinking intervention have also shown promise (e.g., Pilling & Brannon, 2007). Binge drinking interventions involving the use of social norms messages, however, have shown mixed results. While the previous research may suggest that personalized intervention strategies involving self-schema matched messages will be more effective at reducing college binge drinking than intervention strategies involving social norms messages, a review of the literature on the individual difference variable self-monitoring provided a basis for conducting a more thorough examination of the effectiveness of social norms and self-schema

matched intervention strategies. Specifically, it was suspected that self-monitoring would serve as a moderator of the effectiveness of self-schema matched and social norms binge drinking interventions. The purpose of the current study was to test this moderating effect and to examine how students react to these anti-binge drinking messages. This study did not involve an actual implementation of drinking interventions. Rather, it examined drinking intention and reactions to the binge drinking intervention messages to obtain a better understanding of what types of interventions may be most effective for low and high self-monitors.

Research has shown behavioral intention to be a significant predictor of actual behavior (Hillhouse et al., 2000). More specifically, research has shown binge drinking behavior to be significantly predicted by intentions to binge drink (Johnston & White, 2003). While gathering data on actual later behavior is the ideal measurement of message effectiveness, doing so can be time-consuming, and one will likely face challenges in getting all participants to complete a post-test measure. Given that behavioral intention has been found to be a good predictor of later actual behavior, and because measuring intentions at the time of message exposure is less time-consuming than measuring actual behavior later on and eliminates the risk of losing participants for post-test measurement, drinking intention served as the main dependent variable of interest in the current study. It was predicted that participants would intend to drink less when exposed to a message that matched their self-monitoring. Specifically, it was predicted that for those presented with a self-schema matched anti-binge drinking message, low self-monitors would intend to drink less than would high self-monitors. On the other hand, it was predicted that for those presented with a social norms anti-binge drinking message, high self-monitors would intend to drink less than would low self-monitors.

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Supplementary to examining drinking intention, the current study also explored other variables like reactions to the anti-binge drinking message and beliefs about binge drinking to see how such variables might be related to drinking intention. It is common methodology when implementing problem drinking interventions to first examine evaluations of how the information is being communicated before actually implementing the intervention (Kypri et al., 2003; Koski-Jannes & Cunningham, 2001). Similarly, advertising research examining which of multiple advertisements for the same product has the most potential success, has found positive relationships between attitudes toward the advertisement and attitude toward the product brand, and positive attitudes toward the brand are expected to have a positive influence on purchasing behavior (Haley & Baldinger, 2000; MacKenzie, Lutz, & Belch, 1986). Based on such research, Pilling and Brannon (2007) inferred that because college students in their study had significantly more positive attitudes toward a personalized versus a social norms anti-binge drinking message, the personalized message would likely be more effective at actually reducing binge drinking among college students.

The current study served to replicate and extend the work of Pilling and Brannon (2007) in a couple of ways. First, the current study examined self-monitoring as a moderator of anti-binge drinking message effectiveness, in hope of shedding some light on the mixed findings regarding the effectiveness of social norms intervention strategies. Secondly, the current study examined how reactions to the messages and beliefs about drinking (including attitudes toward the message and beliefs about drinking similar to those measured by Pilling and Brannon) might help explain differences in drinking intention. As suggested by Pilling and Brannon, it was predicted that group differences in reactions to the message and beliefs about binge drinking would parallel differences in drinking intention.

CHAPTER 2 - Method

Participants

One hundred one undergraduate students enrolled in general psychology courses at Kansas State University during the Spring and Summer 2009 semesters participated in the study in partial fulfillment of a course requirement. In order to examine differences between students who were distinctly low or high in self-monitoring, data from participants with middle scores (i.e., scores of 9 or 10) on the self-monitoring scale (which ranges in scores from 0 to 18) were excluded from analyses, resulting in a sample size of 76. Data from one additional participant were excluded from analyses because the participant reported a negative number to indicate how frequently he or she intended to engage in an activity on the intended behavior questionnaire. Responding with negative numbers did not follow instructions for completing this questionnaire and was an indication that the participant may have not followed directions appropriately throughout the experiment. The final sample consisted of 75 participants (47 female, 28 male) with a mean age of 19.87 years ($SD = 2.36$).

Materials and Procedure

Participants were informed that the purpose of their participation was to provide feedback about a website containing information on what to do for fun in their college town. Participants were also informed that the researchers were interested in seeing how the participants' personalities and what types of activities they engage in might influence how they evaluate the website. Before beginning the experiment, participants were asked to read and sign a form of consent, which indicated that the experiment would involve questions about how frequently participants engage in various behaviors, including alcohol consumption. Participants were randomly assigned to their own computer and were given verbal instructions by the researcher.

When participants opened the program, by clicking on the Internet Explorer icon, they began by providing demographic information (i.e., age, gender, Greek affiliation, athletic involvement).

Next, participants were informed that the researchers were interested in seeing how students' personalities (actually their self schemas) might influence how they evaluated the website. Participants were presented with an image of the four self-schema cards that have been used in previous research as described earlier (e.g., Brannon & Brock, 1994; Brannon & McCabe, 2002; Pilling & Brannon, 2007). This image of the cards was displayed both on the computer screen and on a sheet of paper. Each self-schema type was represented and referred to by a string of four trait adjectives that were preceded by "I am…," a short descriptive paragraph incorporating the trait adjectives, and a graphic of individuals whose attire and depicted behaviors are reflective of the traits on the card. For example, the descriptive paragraph for the Adventuresome-Skillful-Competitive-Spontaneous schema type reads, "I need to be free to act on a moment's notice, impulsively and spontaneously. I believe that life is to enjoy, so I thrive on fun, variety, and excitement. Living in the moment, I act on every opportunity." The other three schema types are the Warm-Communicative-Compassionate-Feeling schema, the Versatile-Wise-Conceptual-Curious schema, and the Responsible-Dependable-Helpful-Sensible schema. The descriptive paragraphs and descriptions of the graphics associated with each schema type appear in Appendix A. Participants examined the schema types and selected the one schema type they identified with the most.

Participants were also told that the researchers were interested in examining how the participants' evaluation of the website might also be influenced by how frequently they typically engage in certain types of activities like going to the zoo and going dancing or use certain services on campus and around town such as the student health center and nutritional counseling

services (see Appendix B for the full Activities and Interests Survey). Participants were asked to report how many times per week they engaged in each behavior or utilized each service. Within this survey, participants were also asked about their drinking behavior. Responses to two questions asking how many drinks participants typically had in one night when going out drinking and when staying in to drink were combined and used as a measure of pre-message, or baseline, drinking behavior. For example, a participant who reported typically consuming three drinks in one night when going out drinking and four drinks in one night when staying in to drink would have a baseline drinking score of seven.

Participants then viewed the website simulation, prior to which they were again instructed that they would be viewing a website containing information about fun activities and local services available in their college town, and that they should be sure to look through each page in a consistent manner, since they would later be asked to provide feedback about the website. On the homepage of the website were links to pages containing information about points of interest (e.g., zoos and museums), health organizations (e.g., Mothers Against Drunk Driving and the university health center), spiritual organizations (e.g., Campus Crusade for Christ and Muslim Student Association), local services (e.g., public library and local airport), and bars (e.g., Auntie Mae's Parlor and The Salty Rim). In the left-hand margin of the last page of the website, the bars page, participants were presented with one of three types of anti-binge drinking messages: a control message, a social norms message, or a message matched to the self-schema type participants identified with earlier in the experiment. The messages have been pretested and have been used in published research (i.e., Pilling & Brannon, 2007) conducted with college students from the same population that was sampled from for the current study. The control message communicated very generally that excessive alcohol consumption can

negatively impact a person's life. This message did not suggest that any certain type of person may be more or less susceptible than others to such problems. Participants in the control message condition saw the following message:

"Drinking to excess leads to many problems in a person's life. Different types of people experience different types of problems, but most people who drink to excess experience a variety of difficulties. These can interfere with the person's quality of life. Drinking in moderation is the best choice. Don't Binge Drink!"

The social norms message conveyed to the participants that the normative drinking behavior of their campus peers is less than they probably believe it to be. This message was based on data assessing typical student drinking behavior at Kansas State University collected by the university. Participants in the social norms message condition saw the following message:

"When going out to the bar, or even staying in with friends, most K-State students could count the number of drinks they have on one hand. Sure there are a few exceptions that really stand out, but generally, K-State students do not drink alcohol in excess, and many don't drink at all. Don't be the exception to the rule! Don't Binge Drink!"

Finally, there were four matched to self-schema messages, each one tapping at the values and beliefs associated with one of the four schema types. For example, participants in the self-schema message condition who identified with the adventuresome self-schema type at the beginning of the experiment saw the following message:

"Alcohol is actually a depressant. When too much is consumed, alcohol dulls the senses and slows a person down, thereby making it impossible for them to be the life of the party. Binge drinking actually limits the amount of fun and excitement you can experience in a night. Live The Exciting Life! Don't Binge Drink!"

All of the messages, including the other three schema matched messages, appear in Appendix C. It is important to note that although there were four matched to self-schema messages, participants in this condition were presented with only the message that matched to the self-schema they identified with earlier in the experiment. In other words, which self-schema message participants in this condition received was not necessarily of interest, but rather, what is important is that these participants received a personalized message, as opposed to a control or a social norms message. Each computer was preprogrammed to present only one type of message. Participants were assigned to computers in a manner that ensured that each of the three types of messages was distributed to an equal number of participants.

After viewing the website, in an effort to maintain the cover story of the study, participants completed a Website Opinions Questionnaire (see Appendix D). Using a 7-point Likert-type-type scale, participants indicated how strongly they agreed or disagreed (1 = disagree strongly, 7 = agree strongly) with seven statements regarding their opinion of the website (e.g., "The webpage with information on bars in town was interesting").

Next, participants were told that the researchers were interested in how the website might have influenced their future behavior, because they may have received some new information about the available services and activities around town. Participants were asked about the same activities (e.g., going to the zoo and museums, going dancing, etc.) and services (e.g., university health center, nutritional counseling services, etc.) that they were asked about earlier in the experiment, but this time they were asked to report how frequently they *intended* to engage in the activities and use the services in the next week. Refer to Appendix E for the full Intended Behaviors Survey.

The Intended Behaviors Survey was followed by a survey measuring participants' reactions to the message they saw on the bars web page. At the beginning of this survey, it was explicitly stated that the researchers were interested in presenting students with public service announcements about some health-relevant behaviors. Participants were reminded that they just read a message related to binge drinking in the website they viewed, and the message they previously saw was displayed on this page. Using 7-point Likert-type-type scales, participants responded to several statements about their reaction to the message they viewed in the website. These items dealt with attitude toward the message (e.g., "I got a positive impression of the message," 1 = Disagree Strongly, 7 = Agree Strongly), learning from the message (e.g., "I learned something from the message," 1 = Disagree Strongly, 7 = Agree Strongly), and ease of understanding the message (e.g., "I understood the message very well," 1 = Disagree Strongly, 7 = Agree Strongly). The full Reaction to the Message Survey appears in Appendix F.

Participants were also informed that the researchers were interested in their beliefs about drinking alcohol and were asked to respond to another set of several items using 7-point Likert-type scales. These items dealt with attitude toward binge drinking (e.g., "I ＿＿ of binge drinking," 1 = Approve, 7 = Disapprove) and perceived severity of the consequences of binge drinking (e.g., "Binge drinking can have serious negative consequences," 1 = Disagree Strongly, 7 = Agree Strongly). At the top of this survey, participants were provided with a definition of binge drinking as consuming at least four drinks on one occasion for females and consuming at least five drinks on one occasion for males. The full Drinking Beliefs Survey appears in Appendix G.

Next, participants completed Snyder and Gangestad's (1986) 18-item self-monitoring scale, which had an internal consistency of $\alpha = .76$. Participants responded with TRUE or

FALSE to statements that tap at how strongly they are influenced by their social environment versus their personal values and attitudes. For example, for the item, "I have trouble changing my behavior to suit different people and different situations," low self-monitors tend to respond with TRUE, and high self-monitors tend to respond with FALSE. On the other hand, for items such as "In different situations and with different people, I often act like very different people," high self-monitors tend to respond with TRUE, and low self-monitors tend to respond with FALSE. Participants who scored between 1 (the minimum scale score) and 8 on the self-monitoring measure were classified as low self-monitors. Participants who scored between 11 and 18 (the maximum scale score) on the measure were classified as high self-monitors. The full self-monitoring measure appears in Appendix H. The experimental computer program finished with a debriefing message describing the purpose of the study and providing contact information for the experimenter if participants had questions or concerns about the study or drinking behavior.

After completing the experiment, participants were verbally informed and were provided with a reminder slip telling them that they may be contacted two weeks later and asked to complete a short follow-up survey. This follow-up survey was very similar to the Activities and Interests Survey and the Intended Behavior Survey in that it asked participants about how frequently they engaged in the same behaviors asked about in the previous two surveys. In the follow-up survey, participants were asked how frequently they had engaged in the behaviors within the last two weeks (e.g., "When you have gone out drinking alcohol in the last two weeks, how many drinks did you usually have in one night?"). The entire follow-up survey appears in Appendix I.

CHAPTER 3 - Results

Drinking Intention

To test for group differences in intended drinking behavior after being exposed to an anti-binge drinking message, a 2 (self-monitoring: low/high) X 3 (message: control/self-schema matched/social norms) ANCOVA was conducted, with pre-message drinking behavior as the covariate. Means and standard errors for this analysis are displayed in Table 1 and results from the ANCOVA are displayed in Table 2. The main effect for self-monitoring was not significant, $F(1, 68) = .07$, $p = .79$. Although the main effect for message condition also was not significant, $F(2, 68) = .67$, $p = .52$, the trend in the means across message conditions was in the expected direction, with participants exposed to either the social norms message ($M = 4.49$, $SE = .41$) or the self-schema matched message ($M = 4.44$, $SE = .41$) intending to drink less than those exposed to the control message ($M = 5.04$, $SE = .40$). This mean trend suggests that a social norms or a self-schema matched message may be equally effective at influencing an intention to drink less, and that both may be more effective than a generalized message.

It was hypothesized that depending on an individual's level of self-monitoring, there would be variation in the effectiveness of social norms and self-schema matched anti-binge drinking messages. A test of the interaction between self-monitoring and message condition on drinking intention was significant, supporting this hypothesis, $F(2, 68) = 3.73$, $p = .03$, partial η^2 = .10. More specifically, it was predicted that if presented with a self-schema matched anti-binge drinking message, low self-monitors would intend to drink less than would high self-monitors. On the other hand, if presented with a social norms anti-binge drinking message, high self-monitors were predicted to intend to drink less than would low self-monitors. Simple effects analyses were conducted to further explore the significant interaction between self-monitoring

and message condition by examining differences in intended drinking behavior between low and high self-monitors within each of the three message conditions. Within the control message condition, as expected, low ($M = 4.42$, $SE = .52$) and high ($M = 5.65$, $SE = .63$) self-monitors did not differ significantly in their intended drinking behavior, $F(1, 68) = .49$, $p = .49$. Although the intended drinking behavior between low and high self-monitors was not significantly different within the self-schema matched message condition, $F(1, 68) = .79$, $p = .38$, the means were in the expected direction, with low self-monitors ($M = 4.02$, $SE = .48$) intending to have fewer drinks than high self-monitors ($M = 4.86$, $SE = .66$). Lastly, the specific prediction for the simple effect of the social norms message condition was statistically supported, $F(1, 68) = 4.41$, $p = .04$, partial $\eta^2 = .06$, with high self-monitors ($M = 3.65$, $SE = .55$) intending to drink significantly fewer drinks than low self-monitors ($M = 5.33$, $SE = .60$). This finding suggests that a social norms anti-binge drinking message would be more effective for high self-monitors than for low self-monitors.

Exploratory Analyses of Supplemental Measures

In addition to examining intended drinking behavior, group differences in several supplemental variables were also explored. Participants' reactions to the anti-binge drinking messages and their beliefs about binge drinking were examined as possible factors contributing to the differences in intended drinking behavior between low and high self-monitors, depending on the message they were exposed to.

Reactions to the Message

Although intended drinking behavior was the dependent variable of main interest, group differences in participants' reactions to the anti-binge drinking messages were also examined. A principal component analysis with varimax rotation was conducted on 15 items on which

participants rated the message by responding to each item on a 7-point Likert-type scale. Three components were extracted with eigenvalues greater than 1. Items with loadings of .70 or greater were selected for inclusion in a component.

Results of principle components analysis

The first component was interpreted as *attitude toward the message*, for which six items loaded strongly onto: "I got a positive impression of the message" (1 = Disagree Strongly, 7 = Agree Strongly); "I found the message attractive" (1 = Disagree Strongly, 7 = Agree Strongly); "I ____ the message" (1 = Dislike, 7 = Like); "I react ____ to the message" (1 = Unfavorably, 7 = Favorably); "The message is ____" (1 = Good, 7 = Bad); and "I feel ____ to the message" (1 = Positively, 7 = Negatively). The last two items on this subscale were reverse scored. For each participant, a mean score for the six items was calculated to create a single attitude toward the message score, with a higher score indicating a more positive attitude toward the message. The attitude toward the message subscale had a reliability of $\alpha = .92$.

The second component was identified as *learning from the message*. Two items loaded strongly onto this component: "I learned something from the message" (1 = Disagree Strongly, 7 = Agree Strongly); and "I received new information from the message" (1 = Disagree Strongly, 7 = Agree Strongly). The mean response to these items served as a single learning from the message score for each participant, with a higher score indicating greater learning from the message. The learning from the message subscale had a reliability of $\alpha = .92$.

Understanding/clarity of the message was identified as the third component extracted from the initial 15-item reaction to the message scale. Two items loaded strongly onto this component: "I understood the message very well" (1 = Disagree Strongly, 7 = Agree Strongly); and "I found the message very clear" (1 = Disagree Strongly, 7 = Agree Strongly). The mean

response to these items served as a single understanding/clarity of the message score for each participant, with a higher score indicating greater understanding or perceived clarity of the message. The understanding/clarity of the message subscale had a reliability of $\alpha = .94$.

Reactions to the message ANCOVAs

A series of 2 (self-monitoring: low/high) X 3 (message: control/self-schema matched/social norms) ANCOVAs were conducted to examine group differences for each of the four message rating components described above. Pre-message drinking behavior served as the covariate in each analysis. It was expected that the same factors that would influence drinking intention (i.e., the interaction between self-monitoring and type of message) would also influence more positive attitudes toward the message, more learning from the message, and greater perceived clarity in the message. Although no significant interaction effects were found from these analyses, the mean trends for some analyses were in the expected direction, and these results are thought to be useful in making suggestions for future research. Therefore, these results and their implications are described below.

ANCOVA of attitude toward the message

The ANCOVA testing for differences in attitude toward the message did not reveal a significant main effect for self-monitoring, $F(1, 68) = .05$, $p = .82$, nor for message condition, $F(2, 68) = .05$, $p = .95$. However, across message conditions, means for attitude toward the message were in the expected direction, consistent with findings from the analyses of intended drinking behavior, with those in the social norms ($M = 5.06$, $SE = .23$) and the self-schema matched ($M = 5.14$, $SE = .23$) message conditions reporting slightly more positive attitudes toward the message than those in the control message condition ($M = 5.04$, $SE = .22$). Although the interaction between message condition and self-monitoring was not significant, $F(2, 68) =$

.37, $p = .69$, the patterns in mean attitude ratings within the self-schema and social norms message conditions were in the expected direction. That is, low self-monitors ($M = 5.24$, $SE = .27$) reported slightly more positive attitudes toward the self-schema matched message than did high self-monitors ($M = 5.05$, $SE = .37$), while high self-monitors ($M = 5.19$, $SE = .31$) reported slightly more positive attitudes toward the social norms message than did low self-monitors ($M = 4.94$, $SE = .33$). Means and standard errors for this analysis are displayed in Table 3 and results from the ANCOVA are displayed in Table 4.

ANCOVA of learning from the message

The ANCOVA testing for differences in learning from the message did not reveal a significant main effect for self-monitoring, $F(1, 68) = 1.37$, $p = .25$. The main effect for message condition, however, was significant, $F(2, 68) = 7.94$, $p = .001$, partial $\eta^2 = .19$. Duncan post hoc analyses revealed that while reported learning by participants in the self-schema matched ($M = 4.05$, $SE = .33$) and social norms message conditions ($M = 4.45$, $SE = .33$) did not differ significantly from one another, both were significantly greater than reported learning from the control message ($M = 2.68$, $SE = .33$), $p < .05$. The interaction between message condition and self-monitoring was not significant, $F(2, 68) = .10$, $p = .90$, but the trend in individual cell means for learning from the message was partially in the expected direction. Specifically, the mean trend in the social norms message condition was consistent with predictions, with high self-monitors ($M = 4.66$, $SE = .45$) reporting slightly greater learning than did low self-monitors ($M = 4.23$, $SE = .49$). However, within the self-schema message condition, the mean trend was the opposite of what was expected, with high self-monitors ($M = 4.38$, $SE = .54$) again reporting slightly greater learning from the message than did low self-monitors ($M = 3.71$, $SE = .39$).

Means and standard errors for this analysis are displayed in Table 5 and results from the

ANCOVA are displayed in Table 6.

ANCOVA of understanding/clarity of the message

The ANCOVA testing for differences in understanding/clarity of the message did not

reveal a significant main effect for self-monitoring, $F(1, 68) = 1.93$, $p = .17$, nor for message

condition, $F(2, 68) = 1.73$, $p = .18$. Examination of the mean pattern across all message

conditions showed that all three messages were given high ratings of clarity (i.e., for all three

conditions, $M = 5.44$ or greater). The interaction between message condition and self-monitoring

was marginally significant, $F(2, 68) = 2.53$, $p = .09$, partial $\eta^2 = .07$, and mean trends for the self-

schema and social norms message conditions were in the expected directions. Specifically, the

self-schema matched message was rated as more understandable/clear by low self-monitors ($M =$

5.99, $SE = .29$) than by high self-monitors ($M = 4.88$, $SE = .40$), while the social norms message

was rated as more understandable/clear by high self-monitors ($M = 6.07$, $SE = .33$) than by low

self-monitors ($M = 5.62$, $SE = .36$). Means and standard errors for this analysis are displayed in

Table 7 and results from the ANCOVA are displayed in Table 8.

Beliefs About Binge Drinking

Along with reactions to the message, beliefs about binge drinking were examined as

possible factors contributing to the differences found in intended drinking behavior between low

and high self-monitors. A principal component analysis with varimax rotation was conducted on

19 items on which participants indicated their beliefs about binge drinking by responding to each

item on a 7-point Likert-type scale. Two components were extracted with eigenvalues greater

than 1, and items with loadings of .70 or greater were selected for inclusion in a component.

Results of principal component analysis of beliefs about binge drinking

The first component was interpreted as *attitude toward binge drinking*, for which six items loaded strongly onto: "Binge drinking is a _____ behavior" (1 = Good, 7 = Bad); "I _____ of binge drinking" (1 = Approve, 7 = Disapprove); "I feel _____ toward binge drinking" (1 = Negative, 7 = Positive); "Binge drinking is _____" (1 = Awful, 7 = Nice); "Binge drinking is _____" (1 = Unpleasant, 7 = Pleasant); and "Binge drinking is _____" (1 = Unattractive, 7 = Attractive). The last four items on this subscale were reverse scored. For each participant, a mean score for the six items was calculated to create a single attitude toward binge drinking score, with a higher score indicating a more negative attitude toward binge drinking. The attitude toward binge drinking subscale had a reliability of $\alpha = .95$.

The second component was identified as *perception of binge drinking consequence severity*. Two items loaded strongly onto this component: "Binge drinking can have serious negative consequences" (1 = Disagree Strongly, 7 = Agree Strongly); and "If you make the wrong decisions about your drinking behavior, there is _____ to lose" (1 = Little, 7 = A Lot). The mean response to these items served as a single perception of binge drinking consequence severity score for each participant, with a higher score indicating greater perceived severity of consequences associated with binge drinking. This subscale had a reliability of $\alpha = .81$.

Beliefs about binge drinking ANCOVAs

A series of 2 (self-monitoring: low/high) X 3 (message: control/self-schema matched/social norms) ANCOVAs were conducted to examine group differences for each of the two drinking beliefs components described above. In each of the analyses, pre-message drinking behavior served as the covariate. It was anticipated that the same factors that would lead to lower drinking intentions (i.e., the interaction between self-monitoring and type of message) would

also lead to more negative attitudes toward binge drinking and greater perceived severity of the consequences associated with binge drinking. As with the analyses for reactions to the message, no significant interaction effects were found from the analyses of beliefs about binge drinking. Still, the mean trends for some analyses were in the expected direction, and these results are thought to be useful in making suggestions for future research. Therefore, these results and their implications are described below.

ANCOVA of attitude toward binge drinking

The ANCOVA testing for differences in attitude toward binge drinking did not reveal a significant main effect for self-monitoring, $F(1, 68) = .01$, $p = .93$, nor for message condition, $F(2, 68) = .40$, $p = .68$. In all three message conditions, participants' responses indicated negative attitudes toward binge drinking (i.e., $M = 5.50$ or greater, with higher scores indicating more negative attitudes). The interaction between message condition and self-monitoring on attitude toward binge drinking was also not significant, $F(2, 68) = .74$, $p = .48$, but mean trends were partially in the expected directions. Within the self-schema message condition, means were in the expected direction, with slightly more negative attitudes toward binge drinking reported by low self-monitors ($M = 5.91$, $SE = .26$) than by high self-monitors ($M = 5.65$, $SE = .36$). However, within the social norms message condition, means were not in the expected direction, with slightly more negative attitudes toward binge drinking again reported by low self-monitors ($M = 5.61$, $SE = .32$) than by high self-monitors ($M = 5.39$, $SE = .30$). Means and standard errors for this analysis are displayed in Table 9 and results from the ANCOVA are displayed in Table 10.

ANCOVA of perception of severity of binge drinking consequences

The ANCOVA testing for differences in perception of severity of binge drinking consequences did not reveal a significant main effect for self-monitoring, $F(1, 68) = 1.41$, $p = .24$. The main effect for message condition, however, was significant, $F(2, 68) = 3.09$, $p = .05$, $\eta^2 = .01$. Duncan post hoc analyses indicated that this significant main effect was driven by the consequences of binge drinking being perceived as significantly more severe in the self-schema message condition ($M = 6.71$, $SE = .21$) than in the control message condition ($M = 6.00$, $SE = .20$), $p = .05$. The mean perception of consequence severity in the social norms message condition ($M = 6.28$, $SE = .20$) did not differ significantly from either the control message condition or the self-schema message condition. The interaction between message condition and self-monitoring was not significant, $F(2, 68) = 2.41$, $p = .10$, and mean patterns within the self-schema and social norms message conditions were not in the expected directions. Specifically, within the self-schema message condition, high self-monitors ($M = 6.88$, $SE = .33$) perceived the consequences of binge drinking to be slightly more severe than did low self-monitors ($M = 6.50$, $SE = .24$), and within the social norms message condition, low self-monitors ($M = 6.40$, $SE = .30$) perceived the consequences of binge drinking to be slightly more severe than did high self-monitors ($M = 6.15$, $SE = .28$). Means and standard errors for perceptions of the severity of binge drinking consequences are displayed in Table 11 and results from the ANCOVA are displayed in Table 12.

The Relationship between Drinking Intention and Post-Message Drinking Behavior

In order to examine drinking intention as a predictor of actual drinking behavior, two weeks after participating in the study, participants were asked to complete a short follow-up

survey about their behaviors, including drinking alcohol during the previous two weeks. Since

not all participants completed the follow-up survey, the number of participants who had data for

both drinking intentions and actual drinking behavior was small ($n = 26$). Even with this small

sample size, a bivariate correlation analysis for intended drinking behavior and actual drinking

behavior was significant, $r = .77$, $p < .01$. In other words, students typically drank how much

alcohol they said they would drink following their participation in the main study.

CHAPTER 4 - Discussion

Drinking Intention

The central hypothesis that self-monitoring would interact with message condition to

affect intended drinking behavior was supported. That is, the effect that self-schema matched and

social norms messages had on participants' intended drinking behavior depended on whether

they were low or high self-monitors. The specific predictions of how self-monitoring would

influence the effect of each message condition was partially supported. As expected, the intended

drinking behavior for low and high self-monitors within the control message condition did not

differ. Within the self-schema matched message condition, low self-monitors intended to drink

less than high self-monitors, however, this difference was not statistically significant. Finally, as

expected, within the social norms message condition, high self-monitors intended to drink

significantly less than did low self-monitors.

These findings begin to shed some light on the mixed findings regarding the effectiveness

of social norms binge drinking reduction techniques. Although social norms intervention

strategies are commonly used on college campuses as a method for reducing binge drinking

among students (Wechsler et al., 2004), some investigations have shown social norms techniques

to be effective at reducing binge drinking among college students (e.g., Gomberg et al., 2001;

Haines & Spear, 1996; Johannessen et al., 1999), while others have found no effect (Wechsler et al., 2003; Werch et al., 2000). The results of the current study suggest that a social norms approach to reducing binge drinking among college students will be more effective for one group of students than for another, namely, for high self-monitors versus low self-monitors. Additionally, previous research examining attitudes toward anti-binge drinking messages has found personalized self-schema matched messages to show more promise than a social norms message for reducing binge drinking among college students (Pilling & Brannon, 2007). Partially consistent with Pilling and Brannon's findings, the current study found, across all participants, self-schema messages to be equally effective as a social norms message in influencing drinking intention. However, the current study adds to the findings of Pilling and Brannon by illustrating that a social norms message may actually be effective for a specific group of individuals: high self-monitors.

The findings for drinking intention were also supported by a significant positive relationship between intentions for drinking following participation in the study and actual drinking behavior during that time. In other words, participants reported drinking how much they said they were going to drink. This finding is consistent with previous research which has shown binge drinking intention to be a significant predictor of actual binge drinking (Johnston & White, 2003). Knowing that behavioral intention can serve as a strong predictor of actual behavior has an important practical implication. Since intention is a good predictor of actual behavior, measuring intention when testing possible binge drinking or other health-related intervention strategies can provide a much faster indication of intervention efficacy than would measurement of actual behavior, saving time and resources.

Supplemental Measures

Reactions to the Messages

Although intended drinking behavior was the main dependent variable of interest in measuring message effectiveness, additional variables were examined as factors that could potentially contribute to differences in message effectiveness found between experimental groups. Other researchers have suggested that differences in attitudes toward anti-binge drinking messages may serve as an indication of how effective the message will be. For example, Pilling and Brannon (2007) found self-schema matched messages to be rated more favorably than a social norms message. Based on research illustrating a relationship between attitudes toward a persuasive message and later behavior, they inferred that if students have more positive attitudes toward a message, their behavior should be more likely to be influenced by the message. Similar reactions to the messages were also examined in the current study. Consistent with Pilling and Brannon's inference about the relationship between students' attitudes toward anti-binge drinking messages and the effectiveness of the messages, it was predicted that group differences in reactions to the messages would coincide with group differences in intended drinking behavior. For example, because high self-monitors intended to drink less than did low self-monitors after being exposed to a social norms message, the high self-monitors were expected to rate the social norms message more favorably than would low self-monitors. From a 15-item scale, three components were extracted as measures of participants' ratings of the message: *Attitude toward the Message*, *Learning from the Message*, and *Understanding/Clarity of the Message*. Tests of the effects of the independent variables (self-monitoring and message condition) and their interaction on each of these three components did not reveal significant interactions, though some of the mean trends were in the expected direction.

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Attitude toward the message

Although the main effects and interaction of self-monitoring and message condition on attitude toward the message were not significant, mean trends were consistent with the suggestion made by Pilling and Brannon (2007). That is, while high self-monitors intended to drink significantly less than did low self-monitors after exposure to a social norms message, they also reported slightly more positive attitudes toward the social norms message than did low self-monitors. Additionally, while low self-monitors intended to drink less than did high self-monitors after exposure to a self-schema matched message, they also reported slightly more positive attitudes toward the self-schema matched message than did high self-monitors. However, because the main effects and interaction of self-monitoring and message condition on attitude toward the message were not significant, further investigation of attitude toward the message as a potential reason for differences in intended drinking behavior was not pursued. Still, it is promising to know that group means were in the anticipated direction. Additional research demonstrating similar significant findings would add more support to the prediction that anti-binge drinking messages will be more effective when students have positive attitudes toward the messages.

Learning from the message

Consistent with mean trends across message conditions for drinking intention, participants reported learning significantly more from both the self-schema message and the social norms message in comparison to the control message. In relation to the findings for drinking intention, this finding may suggest that in comparison to a message that is phrased to target a very broad, general group, social norms and self-schema messages may be more effective partly because they are perceived as more informative. Significance was not obtained

for the interaction between message condition and self-monitoring on learning from the message, but mean tends were partially consistent with predictions. Examination of cell means across self-monitoring categories revealed that high self-monitors reported slightly more learning than low self-monitors for both the social norms and the self-schema matched message. Additionally, when examining cell means *within* self-monitoring conditions, the mean trend for low self-monitors was not in the expected direction, with greater learning reported from the social norms message than from the self-schema message. Although this finding was not consistent with the prediction that results from the message rating factors would parallel results for drinking intention, it does make sense that low self-monitors reported learning slightly more from the social norms message than from the self-schema matched message. Low self-monitors typically are not as focused on the behavior of those around them to help guide their own behavior as high self-monitors are, but rather focus more on their personal values and attitudes. Therefore, it should not be surprising that the low self-monitors reported greater learning from a message that provided information on how one's peers typically behave compared to a message that was tailored to one's personal values and attitudes.

Understanding/clarity of the message

Another aspect of the message that was examined as a potential reason for group differences in drinking intention was the understanding/clarity of the message. Although the nonsignificant mean trend for message condition showed the control message, which was found to be the least effective in terms of drinking intention, to be rated as the most understandable or clear of the three messages, all three messages were rated as very clear and understandable ($M =$ 5.44 or higher on a 7-point scale). Although the interaction of self-monitoring and message condition on understanding/clarity of the message was not significant, examination of cell means

showed that mean trends paralleled results for drinking intention. That is, the social norms message was rated as slightly more understandable/clear by high self-monitors than by low self-monitors, while the self-schema matched message was rated as slightly more understandable/clear by low self-monitors than by high self-monitors.

Beliefs About Binge Drinking

In addition to examining what participants thought about the message, their beliefs about binge drinking were examined as potentially contributing to group differences in drinking intention. It was anticipated that differences in beliefs about binge drinking would parallel group differences in intended drinking behavior. In other words, since high self-monitors intended to drink less than low self-monitors after being exposed to a social norms message, then high self-monitors in this message condition would be expected to express greater agreement than low self-monitors with statements that were supportive of responsible drinking. From a 19-item scale, two components were extracted as measures of participants' beliefs about binge drinking: *Attitude toward Binge Drinking* and *Perception of Binge Drinking Consequence Severity*. Tests of the effects of the independent variables (self-monitoring and message condition) and their interaction on each of these two components did not reveal significant interactions, though the main effect of message condition on the latter component was significant, and some of the mean trends were in the expected direction.

Attitude toward binge drinking

Across all three message conditions, attitudes toward binge drinking were negative, and no significant difference was found across message conditions. The interaction between self-monitoring and message condition was also not significant, but mean trends were partially in the expected direction, with low self-monitors expressing more negative attitudes toward binge

drinking than high self-monitors in both the self-schema and the social norms message conditions. However, for these four conditions, the range of means was only .52, and means were near the upper limit of the response scale (min $M = 5.39$, max $M = 5.91$, on a 7-point scale), with higher scores indicating more negative attitudes toward binge drinking. These results suggest that regardless of whether participants were low or high self-monitors or which message condition they were in, they tended to have negative attitudes toward binge drinking. Additionally, since attitudes toward binge drinking did not differ across groups, this suggests that attitude toward binge drinking may not be a reason for the group differences found for drinking intention.

Perceptions of the severity of binge drinking consequences

Across all three message conditions, participants recognized the severity of binge drinking consequences, but participants in the self-schema message condition perceived the consequences to be significantly more severe than did participants in the control condition. Perceptions of participants in the social norms message condition fell between those of the control and self-schema conditions, but did not differ significantly from either of the latter two conditions. The interaction between self-monitoring and message condition was not significant, and mean trends within the self-schema and social norms message conditions were not in the expected directions. However, in all six conditions, means were within one point of the maximum scale score (i.e., means were 5.54 or higher on a 7-point scale). In other words, regardless of the message participants were exposed to and whether they were low or high self-monitors, they tended to express a belief that binge drinking can result in serious negative consequences. Thus, the results of the current study suggest that perception of the severity of

binge drinking consequences may not be a reason for finding group differences in drinking intention.

Relating Results for Supplemental Variables to Previous Research

Although the interaction effects for the four message reaction factors and the two binge drinking beliefs factors were not significant, these results should not be immediately interpreted as an indication that group differences in drinking intention were not at least partly due to group differences for these factors. Many of the mean trends were in the expected direction, or were consistent with previous research (i.e., Pilling & Brannon, 2007). If the current study had had a larger sample, perhaps these mean differences would have been statistically significant. However, because significance was obtained for the dependent variable of main interest, drinking intention, and examinations of reactions to the messages and beliefs about binge drinking were only supplementary, additional data was not collected to further explore these additional factors. Future research should more thoroughly explore how different responses toward types of anti-binge drinking messages (including questions about how much the recipient feels the message resonates with who they are and what their specific thoughts are about the message, as well as the current measures of attitudes toward the message and attitudes toward binge drinking) influence drinking intention, and ultimately, drinking behavior.

Limitations, Implications, and Future Directions

The main hypothesis of interest (that the effect of an anti-binge drinking message on drinking intention would differ between low and high self-monitors) was supported. Still, the current study had some weaknesses and limitations. Measuring actual drinking behavior after exposure to the anti-binge drinking message as the main dependent variable of interest, rather than drinking intention, would have been ideal. However, considering that within four months,

only 25 of the 75 participants of the main study participated in the follow-up survey, recruiting additional participants to collect enough data on actual behavior following this methodology would have been very time consuming. Data on actual drinking behavior could be measured by actually exposing students to anti-binge drinking messages across campus and comparing pre- and post-message exposure drinking behavior, but this method also requires more time and resources. Still, significant results were obtained from the drinking intention data and, at least some data were collected on later actual behavior which was shown to be significantly and positively related to later actual behavior, consistent with previous research (Johnston & White, 2003). This relationship between behavioral intention and actual behavior indicates that behavioral intention is a good measure for the effectiveness of an intervention aimed at changing behavior, when measuring actual behavior change is not feasible.

Secondly, the independent variables (self-monitoring and message condition) did not significantly interact to affect the four message rating factors, and therefore, these four variables were not further explored as possible reasons for differences found in drinking intention. Although previous research has suggested that people are more likely to be influenced by a persuasive message when their attitudes toward the message are positive (Haley & Baldinger, 2000; MacKenzie, et al., 1986), there may be certain behaviors for which having a positive attitude toward a message is not sufficient for changing behavior. For example, someone might think that an advertisement for a restaurant is humorous, but might decide to not eat there because he or she does not care for the cuisine. On the other hand, even if someone does not feel especially positive toward a message or even feels negatively toward it, that person may still be persuaded to change his or her behavior. For example, a woman may be offended by an advertisement that uses sex to sell a fragrance, but she may still choose to purchase that

fragrance because she likes its scent. In the current study, the attitude toward the message rating was high in all six conditions ($M = 4.92$ to 5.24), and mean patterns for self-monitoring within each message condition was consistent with predictions. Therefore, additional research is needed before message rating factors are ruled out as playing important roles in the effectiveness of anti-binge drinking messages. Perhaps if different questions were asked, or if participants were asked to engage in a thought-listing procedure to provide their feedback about the messages, and if a larger sample had been used we may have found the predicted differences in reactions to the messages.

Applications

In terms of selecting an intervention strategy to reduce binge drinking among college students, administrators may be inclined to select the technique that will be effective for the largest number of students. The results of the current study, along with findings of previous research (i.e., Pilling & Brannon, 2007), suggest that using a personalized technique, like self-schema matched messages, may be preferable to a social norms technique for reducing binge drinking on college campuses, because a personalized approach appears to be effective for both low and high self-monitors, while a social norms approach may be effective only for high self-monitors. Implementing a self-schema matched technique for reducing binge drinking can be accomplished in a variety of ways. One option is to use the internet as a tool for disseminating messages tailored to schema types. Online surveys and cookies could be useful in identifying the types of pages within a college or university's website that students with certain schema types tend to visit. Then, self-schema matched messages could be displayed on web pages that resonate with the respective schema types tailored to in the messages. For example, if it is found that students who identify with the adventuresome schema type tend to visit web pages with

information about recreation or travel activities, an anti-binge drinking message tailored to the

adventuresome self-schema should be most effective if displayed on these types of pages.

The internet could also be a useful tool for encouraging responsible drinking among

college students beyond college and university websites. Given college students' widespread use

of social networking sites like Facebook, based on the information in a user's personal page and

the pages the user visits within the site, cookies could be used to display personalized anti-binge

drinking messages in the advertisement panel that appears throughout the website. For example,

a self-schema message tailored to the curious schema type would most likely be displayed, and

should be most effective, for Facebook users who list learning about the development of new

technologies in their hobbies and interests, are members of education-related groups, etc.

Research findings on self-schema matched messages can also be applied to improving the

effectiveness of television public service announcements. Television PSAs could be tailored to

self-schema types and displayed in conjunction with television programs that resonate with each

schema type. For example, if it is found that individuals who identify with the warm schema

make up a large percentage of the viewing population of certain television programs like soap

operas or afternoon talk shows like *Oprah*, displaying PSAs tailored to the warm schema type

during commercial sessions of such television programs may be an effective way for reaching

this particular group of individuals.

Although a personalized approach such as using self-schema matched messages may be

effective for a larger group of individuals than would a social norms approach, implementing a

personalized technique can clearly be very time- and resource-consuming. Because a social

norms technique typically requires less time investment and less costly resources than do

personalized techniques (e.g., using print media versus the internet or television, respectively),

there may be cases for which using a social norms technique is preferable to using a personalized technique. For institutions that are largely composed of students who are high self-monitors, the current research suggests that a campus-wide distribution of a social norms message may be preferred over the use of personalized messages, because a social norms message should be just as effective as but less labor intensive than a personalized strategy for the majority of the student population. Even if the entire student body is not largely composed of high self-monitors, a social norms strategy could be used for certain groups of students that tend to be largely composed of high self-monitors. Identifying and distributing social norms messages to these specific groups within the student population that are largely composed of high self-monitors should be more efficient and effective than distributing messages to the entire student body. Additionally, as with the dissemination of self-schema messages, the internet could be utilized for more effective use of social norms messages. That is, students who are high self-monitors could be targeted with social norms messages displayed on certain websites that high self-monitoring students are known to typically visit.

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Appendix A - Self-Schema Descriptions

Warm-Communicative-Compassionate-Feeling Self-Schema

I need to search for the meaning and significance of life. I want to make my life count and matter, to become my own authentic self. Integrity, harmony, and honesty are very important to me. I feel that I am highly idealistic and spiritual by nature.

Graphic: image of romantic couple, poetry book, diary, flowers, doves

Adventuresome-Skillful-Competitive-Spontaneous Self-Schema

I need to be free to act on a moment's notice, impulsively and spontaneously. I believe that life is to enjoy, so I thrive on fun, variety, and excitement. Living in the moment, I act on every opportunity.

Graphic: image of cowboy, rodeo, motorcycle, hunters, tools

Versatile-Wise-Conceptual-Curious Self-Schema

I need freedom to pursue knowledge and wisdom and to develop competency by acquiring skills and capabilities. I think life is something to make sense of, to be understood and explained.

Graphic: image of professor, scientist, statue of "the thinker," globe, book

Responsible-Dependable-Helpful-Sensible Self-Schema

I need to be responsible. I want to fulfill my duties and obligations, to organize and structure my life as I see fit. I am practical, sensible, and punctual and believe that people should earn their way through work and service to others.

Graphic: image of businessperson, nurse, newspaper, American flag, calendar, piggy bank

Appendix B - Activities and Interests Survey

Given that the website you will be viewing involves activities and services in town, we are interested in gaining a better understanding of your current interests and behaviors. Please indicate after the activity, in the space provided, how many times a week you engage in each behavior. You can use fractions or decimals if you want (for example if you do an activity once every 2 weeks, you can answer 0.5).

Use the public library _____ times a week
Go to the zoo _____ times a week
Go to museums in town _____ times a week
Go to the K-State Gardens _____ times a week
Go dancing _____ times a week
Go out drinking _____ times a week
      How many drinks in one night _____
Stay in and drink _____ times a week
      How many drinks in one night _____
Exercise _____ times a week
      For how long _____ minutes
Use Lafene Health Center _____ times a week
Use the Health Education offices on campus _____ times a week
Use the Nutritional Counseling service on campus _____ times a week
Participate in a spiritual organization/activity (however you define it) _____ times a week

Appendix C - Anti-Binge Drinking Messages

Control

Drinking to excess leads to many problems in a person's life. Different types of people experience different types of problems, but most people who drink to excess experience a variety of difficulties. These can interfere with the person's quality of life. Drinking in moderation is the best choice. Don't Binge Drink!

Social Norms

When going out to the bar, or even staying in with friends, most K-State students could count the number of drinks they have on one hand. Sure there are a few exceptions that really stand out, but generally, K-State students do not drink alcohol in excess, and many don't drink at all. Don't be the exception to the rule! Don't Binge Drink!

Matched to Warm-Communicative-Compassionate-Feeling Self-Schema

Excessive alcohol interferes with one's ability to fulfill their unique potential, making this potential fade. Too much alcohol reduces your capacity to be warm with others and communicate your true thoughts and feelings, hurting your relationships. Be True To Yourself And Those You Love. Don't Binge Drink!

Matched to Adventuresome-Skillful-Competitive-Spontaneous Self-Schema

Alcohol is actually a depressant. When too much is consumed, alcohol dulls the senses and slows a person down, thereby making it impossible for them to be the life of the party. Binge drinking actually limits the amount of fun and excitement you can experience in a night. Live The Exciting Life! Don't Binge Drink!

Matched to Versatile-Wise-Conceptual-Curious Self-Schema

Consuming excess alcohol kills brain cells (especially in those younger than 25), thus significantly reducing one's cognitive capacity. It makes people less mentally capable and curious. It's important to be rational and in control of your mind. Don't let too many drinks change your ability to think. Drink Smart, and Don't Binge Drink!

Matched to Responsible-Dependable-Helpful-Sensible Self-Schema

It's sensible to drink responsibly because excessive alcohol interferes with a person's ability to fulfill obligations. Binge drinkers are less concerned with the welfare of others than non-drinkers. You want to be responsible for yourself and those who depend on you. Be Responsible! Don't Binge Drink!

Appendix D - Website Opinions Questionnaire

Thanks a lot for viewing our new website. Now we would really appreciate it if you let us know what you think about it. Please indicate the extent to which you agree with the following statements by selecting a number on the 7-point scale.

1. The webpage with local services in town was interesting.

    1   2   3   4   5   6   7
Disagree Strongly   Agree Strongly

2. The webpage with information on bars in town was interesting.

    1   2   3   4   5   6   7
Disagree Strongly   Agree Strongly

3. The webpage with information on points of interest in town was interesting.

    1   2   3   4   5   6   7
Disagree Strongly   Agree Strongly

4. The webpage with information on health organizations was interesting.

    1   2   3   4   5   6   7
Disagree Strongly   Agree Strongly

5. I would use a website like this to select an activity for the daytime.

    1   2   3   4   5   6   7
Disagree Strongly   Agree Strongly

6. I would use a website like this to select an activity for the evening.

    1   2   3   4   5   6   7
Disagree Strongly   Agree Strongly

7. The website as a whole was interesting.

    1   2   3   4   5   6   7
Disagree Strongly   Agree Strongly

Appendix E - Intended Behavior Survey

You have been viewing a website and reading about several activities to do in Manhattan. You may not have been aware of some of these options before, so we would like to see if you are planning on doing any of these behaviors in the near future. Please indicate how many times you intend to engage in the following behaviors in the next week by placing a number in the space provided.

Use the public library _____ times a week
Go to the zoo _____ times a week
Go to museums in town _____ times a week
Go to the K-State Gardens _____ times a week
Go dancing _____ times a week
Go out drinking _____ times a week
  How many drinks in one night _____
Stay in and drink _____ times a week
  How many drinks in one night _____
Exercise _____ times a week
  For how long _____ minutes
Use Lafene Health Center _____ times a week
Use the Health Education offices on campus _____ times a week
Use the Nutritional Counseling service on campus _____ times a week
Participate in a spiritual organization/activity (however you define it) _____ times a week

Appendix F - Reaction to the Message Survey

One thing that we are interested in is presenting students with public service announcements about some health-relevant behaviors. You just read a message relating to binge drinking. Here it is again:

[The message participants read is displayed here in bold].

Please indicate the extent to which you agree with the following statements by circling a number on the 7-point scale.

1. The message on the website about binge drinking was interesting.
   1   2   3   4   5   6   7
Disagree Strongly   Agree Strongly

2. The binge drinking message positively affected my attitudes about drinking alcohol responsibly.
   1   2   3   4   5   6   7
Disagree Strongly   Agree Strongly

3. The binge drinking message that I read would be effective for the general student population.
   1   2   3   4   5   6   7
Disagree Strongly   Agree Strongly

4. I got a positive impression of the message.
   1   2   3   4   5   6   7
Disagree Strongly   Agree Strongly

5. I found the message attractive.
   1   2   3   4   5   6   7
Disagree Strongly   Agree Strongly

6. I learned something from the message.
   1   2   3   4   5   6   7
Disagree Strongly   Agree Strongly

7. I received new information from the message.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Disagree Strongly   Agree Strongly

8. I understood the message very well.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Disagree Strongly   Agree Strongly

9. I found the message very clear.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Disagree Strongly   Agree Strongly

10. I _____ the message.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Dislike   Like

11. I react ____ to the message.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Favorably   Unfavorably

12. I feel ____ about the message.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Positively   Negatively

13. The message is

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Good   Bad

14. How appropriate is the message in the context of the website you viewed?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Very Inappropriate   Very Appropriate

15. How relevant was the message to the content of the website you viewed?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Very Irrelevant   Very Relevant

Appendix G - Drinking Beliefs Survey

We are also specifically interested in your personal beliefs about drinking alcohol. Please respond to the following statements on the 7-point scale.

Please note that binge drinking is considered as having 5 alcoholic drinks in one sitting for men, and having 4 in one sitting for a woman.

1. Drinking alcohol in moderation is important.

   1   2   3   4   5   6   7

Disagree Strongly   Agree Strongly

2. Binge drinking can have serious negative consequences.

   1   2   3   4   5   6   7

Disagree Strongly   Agree Strongly

3. I intend to avoid the negative consequences of binge drinking.

   1   2   3   4   5   6   7

Disagree Strongly   Agree Strongly

4. Drinking alcohol responsibly is important.

   1   2   3   4   5   6   7

Disagree Strongly   Agree Strongly

5. I intend to drink alcohol responsibly.

   1   2   3   4   5   6   7

Disagree Strongly   Agree Strongly

6. Binge drinking has no negative consequences for me.

   1   2   3   4   5   6   7

Disagree Strongly   Agree Strongly

7. How likely are you to binge drink?

   1   2   3   4   5   6   7

Very Unlikely   Very Likely

8. How likely are you to drink responsibly?

1	2	3	4	5	6	7
Very Unlikely						Very Likely

9. If your friends are interested in drinking, how likely are you to try to get them to drink responsibly?

1	2	3	4	5	6	7
Very Unlikely						Very Likely

10. Binge drinking is a _____ behavior.

1	2	3	4	5	6	7
Good						Bad

11. I _____ binge drinking.

1	2	3	4	5	6	7
Dislike						Like

12. I feel _____ toward binge drinking.

1	2	3	4	5	6	7
Negative						Positive

13. Binge drinking is

1	2	3	4	5	6	7
Awful						Nice

14. Binge drinking is

1	2	3	4	5	6	7
Unpleasant						Pleasant

15. Binge drinking is

1	2	3	4	5	6	7
Unattractive						Attractive

16. I _____ of binge drinking.

1	2	3	4	5	6	7
Approve						Disapprove

17. Decisions regarding your drinking behavior are _____ decisions.

1	2	3	4	5	6	7
Unimportant						Important

18. Decisions about your drinking require _____ thought.

1	2	3	4	5	6	7
Little						A Lot of

19. If you make the wrong decisions about your drinking behavior, there is _____ to lose.

1	2	3	4	5	6	7
Little						A Lot

Appendix H - Self-Monitoring Measure

The statements below concern your personal reactions to a number of different situations. No two statements are exactly alike, so consider each statement carefully before answering. If a statement is TRUE or MOSTLY TRUE as applied to you, choose "T" next to the item. If a statement is FALSE or NOT USUALLY TRUE as applied to you, choose "F" next to the item.

MOSTLY TRUE = T
MOSTLY FALSE = F

1. I find it hard to imitate the behavior of other people.

2. At parties and social gatherings, I do not attempt to do or say things that others will like.

3. I can only argue for ideas for which I already believe.

4. I can make impromptu speeches even on topics about which I have almost no information.

5. I guess I put on a show to impress or entertain others.

6. I would probably make a good actor.

7. In a group of people I am rarely the center of attention.

8. In different situations and with different people, I often act like very different people.

9. I am not particularly good at making other people like me.

10. I'm not always the person I appear to be.

11. I would not change my opinions (or the way I do things) in order to please someone or win their favor.

12. I have considered being an entertainer.

13. I have never been good at games like charades or improvisational acting.

14. I have trouble changing my behavior to suit different people and different situations.

15. At a party I let others keep the jokes and stories going.

16. I feel a bit awkward in public and do not show up quite as well as I should.

17. I can look anyone in the eye and tell a lie with a straight face (if for a right end).

18. I may deceive people by being friendly when I really dislike them.

Appendix I - Follow-Up Survey

Please type in the participant ID number you were provided with in the "Life in Manhattan" research study _____

You previously participated in a study in which you were asked to describe how frequently you engage in various activities, and we'd like to follow up and see how frequently you've engaged in the same activities in the last two weeks.

1. Number of times you have used the public library in the last two weeks _____

2. Number of times you have gone to the zoo in the last two weeks _____

3. Number of times you have gone to museums in town in the last two weeks _____

4. Number of times you have gone to the K-State Gardens in the last two weeks _____

5. Number of times you have gone dancing in the last two weeks _____

6. Number of times you have gone out drinking alcohol in the last two weeks _____

7. When you have gone out drinking alcohol in the last two weeks, how many drinks did you usually have in one night? _____

8. Number of times you have stayed in and drank alcohol in the last two weeks _____

9. When you have stayed in and drank alcohol in the last two weeks, how many drinks did you usually have in one night? _____

10. Number of times you have exercised in the last two weeks _____

11. When you exercised in the last two weeks, for how many minutes did you exercise on each occasion? _____

12. Number of times you have used Lafene Health Center in the last two weeks _____

13. Number of times you have used the Health Education offices on campus in the last two weeks _____

14. Number of times you have used the Nutritional Counseling service on campus in the last two weeks _____

15. Number of times you have participated in a spiritual organization/activity (however you define it) in the last two weeks _____

Table 1 Means and Standard Errors for Intended Drinking Behavior as a Function of Self-Monitoring and Message Condition

Self-monitoring	Control	Social Norms	Schema-Matched	Total
		Message Condition		
Low				
M	4.42	5.33	4.02	4.59
SE	.52	.60	.48	.31
N	15	11	17	43
High				
M	5.65	3.65	4.86	4.72
SE	.63	.55	.66	.36
N	10	13	9	32
Total				
M	5.04	4.49	4.44	4.66
SE	.40	.41	.41	.24
N	25	24	26	75

Note. All means and corresponding standard errors are adjusted for pre-message drinking behavior ($M = 4.64$, $SD = 5.24$). Pre-message drinking behavior is the sum of the number of alcoholic drinks a participant reported consuming each night when going out drinking and the number of alcoholic drinks a participant reported consuming each night when staying in drinking in a typical week prior to being exposed to the anti-binge drinking message.

Intended drinking behavior is the sum of the number of drinks a participant reported intending to drink each night when going out drinking and the number of drinks a participant

reported intending to drink when staying in drinking within the week following participation in the study.

Control Message: Drinking to excess leads to many problems in a person's life. Different types of people experience different types of problems, but most people who drink to excess experience a variety of difficulties. These can interfere with the person's quality of life. Drinking in moderation is the best choice. Don't Binge Drink!

Social Norms Message: When going out to the bar, or even staying in with friends, most K-State students could count the number of drinks they have on one hand. Sure there are a few exceptions that really stand out, but generally, K-State students do not drink alcohol in excess, and many don't drink at all. Don't be the exception to the rule! Don't Binge Drink!

Self-schema Matched Messages:

Warm-Communicative-Compassionate-Feeling Self-Schema Message: Excessive alcohol interferes with one's ability to fulfill their unique potential, making this potential fade. Too much alcohol reduces your capacity to be warm with others and communicate your true thoughts and feelings, hurting your relationships. Be True To Yourself And Those You Love. Don't Binge Drink!

Adventuresome-Skillful-Competitive-Spontaneous Self-Schema Message: Alcohol is actually a depressant. When too much is consumed, alcohol dulls the senses and slows a person down, thereby making it impossible for them to be the life of the party. Binge drinking actually limits the amount of fun and excitement you can experience in a night. Live The Exciting Life! Don't Binge Drink!

Versatile-Wise-Conceptual-Curious Self-Schema Message: Consuming excess alcohol kills brain cells (especially in those younger than 25), thus significantly reducing one's cognitive capacity. It makes people less mentally capable and curious. It's important to be rational and in control of your mind. Don't let too many drinks change your ability to think. Drink Smart, and Don't Binge Drink!

Responsible-Dependable-Helpful-Sensible Self-Schema Message: It's sensible to drink responsibly because excessive alcohol interferes with a person's ability to fulfill obligations. Binge drinkers are less concerned with the welfare of others than non-drinkers. You want to be responsible for yourself and those who depend on you. Be Responsible! Don't Binge Drink!

Table 2 Self-Monitoring x Message Condition Factorial Analysis of Covariance of Intended Drinking Behavior

Source	*SS*	*df*	*MS*	*F*	Partial η^2
Self-monitoring (SM)	.29	1	.29	.07	.00
Message Condition (M)	5.25	2	2.62	.67	.02
M x SM	29.30	2	14.65	3.73*	.10
Pre-message Drinking	1708.57	1	1708.57	435.48***	.87
Error	266.79	68	3.92		
Total	3736.50	75			

Note. All means and corresponding standard errors are adjusted for pre-message drinking behavior ($M = 4.64$, $SD = 5.24$). Pre-message drinking behavior is the sum of the number of alcoholic drinks a participant reported consuming each night when going out drinking and the number of alcoholic drinks a participant reported consuming each night when staying in drinking in a typical week prior to being exposed to the anti-binge drinking message.

Intended drinking behavior is the sum of the number of drinks a participant reported intending to drink each night when going out drinking and the number of drinks a participant reported intending to drink when staying in drinking within the week following participation in the study.

*p < .05

***p < .001

Table 3 Means and Standard Errors for Attitude Toward the Message as a Function of Self-Monitoring and Message Condition

Self-monitoring	Control	Social Norms	Schema-Matched	Total
		Message Condition		
Low				
M	5.16	4.94	5.24	5.11
SE	.29	.33	.27	.17
N	15	11	17	43
High				
M	4.92	5.19	5.05	5.05
SE	.35	.31	.37	.20
N	10	13	9	32
Total				
M	5.04	5.06	5.14	5.08
SE	.22	.23	.23	.13
N	25	24	26	75

Note. All means and corresponding standard errors are adjusted for pre-message drinking behavior (*M* = 4.64, *SD* = 5.24). Pre-message drinking behavior is the sum of the number of alcoholic drinks a participant reported consuming each night when going out drinking and the number of alcoholic drinks a participant reported consuming each night when staying in drinking in a typical week prior to being exposed to the anti-binge drinking message.

Attitude toward the message is the mean of responses to six items used to rate the message on a 7-point Likert-type scale, with a higher mean score indicating more positive attitudes toward the message: "I found the message attractive" (1 = Disagree Strongly, 7 = Agree

Strongly); "I ____ the message" (1 = Dislike, 7 = Like); "I react ____ to the message" (1 = Unfavorably, 7 = Favorably); "The message is ____" (1 = Good, 7 = Bad); and "I feel ____ to the message" (1 = Positively, 7 = Negatively). The last two items were reverse scored.

Control Message: Drinking to excess leads to many problems in a person's life. Different types of people experience different types of problems, but most people who drink to excess experience a variety of difficulties. These can interfere with the person's quality of life. Drinking in moderation is the best choice. Don't Binge Drink!

Social Norms Message: When going out to the bar, or even staying in with friends, most K-State students could count the number of drinks they have on one hand. Sure there are a few exceptions that really stand out, but generally, K-State students do not drink alcohol in excess, and many don't drink at all. Don't be the exception to the rule! Don't Binge Drink!

Self-schema Matched Messages:

Warm-Communicative-Compassionate-Feeling Self-Schema Message: Excessive alcohol interferes with one's ability to fulfill their unique potential, making this potential fade. Too much alcohol reduces your capacity to be warm with others and communicate your true thoughts and feelings, hurting your relationships. Be True To Yourself And Those You Love. Don't Binge Drink!

Adventuresome-Skillful-Competitive-Spontaneous Self-Schema Message: Alcohol is actually a depressant. When too much is consumed, alcohol dulls the senses and slows a person down, thereby making it impossible for them to be the life of the party. Binge drinking actually limits the amount of fun and excitement you can experience in a night. Live The Exciting Life! Don't Binge Drink!

Versatile-Wise-Conceptual-Curious Self-Schema Message: Consuming excess alcohol kills brain cells (especially in those younger than 25), thus significantly reducing one's cognitive capacity. It makes people less mentally capable and curious. It's important to be rational and in control of your mind. Don't let too many drinks change your ability to think. Drink Smart, and Don't Binge Drink!

Responsible-Dependable-Helpful-Sensible Self-Schema Message: It's sensible to drink responsibly because excessive alcohol interferes with a person's ability to fulfill obligations. Binge drinkers are less concerned with the welfare of others than non-drinkers. You want to be responsible for yourself and those who depend on you. Be Responsible! Don't Binge Drink!

Table 4 Self-Monitoring x Message Condition Factorial Analysis of Covariance of Attitude Toward the Message

Source	SS	df	MS	F	Partial η^2
Self-monitoring (SM)	.06	1	.06	.05	.00
Message Condition (M)	.13	2	.07	.05	.00
M x SM	.89	2	.45	.37	.01
Pre-message Drinking	9.88	1	9.88	8.20**	.12
Error	81.99	68	1.21		
Total	2049.03	75			

Note. All means and corresponding standard errors are adjusted for pre-message drinking behavior ($M = 4.64$, $SD = 5.24$). Pre-message drinking behavior is the sum of the number of alcoholic drinks a participant reported consuming each night when going out drinking and the number of alcoholic drinks a participant reported consuming each night when staying in drinking in a typical week prior to being exposed to the anti-binge drinking message.

Attitude toward the message is the mean of responses to six items used to rate the message on a 7-point Likert-type scale, with a higher mean score indicating more positive attitudes toward the message: "I found the message attractive" (1 = Disagree Strongly, 7 = Agree Strongly); "I ____ the message" (1 = Dislike, 7 = Like); "I react ____ to the message" (1 = Unfavorably, 7 = Favorably); "The message is ____" (1 = Good, 7 = Bad); and "I feel ____ to the message" (1 = Positively, 7 = Negatively). The last two items were reverse scored.
**$p < .01$

Table 5 Means and Standard Errors for Learning from the Message as a Function of Self-Monitoring and Message Condition

Self-monitoring	Message Condition			
	Control	Social Norms	Schema-Matched	Total
Low				
M	2.55	4.23	3.71	3.50
SE	.42	.49	.39	.25
N	15	11	17	43
High				
M	2.81	4.66	4.38	3.95
SE	.51	.45	.54	.29
N	10	13	9	32
Total				
M	2.68	4.45	4.05	3.72
SE	.33	.33	.33	.19
N	25	24	26	75

Note. All means and corresponding standard errors are adjusted for pre-message drinking behavior ($M = 4.64$, $SD = 5.24$). Pre-message drinking behavior is the sum of the number of alcoholic drinks a participant reported consuming each night when going out drinking and the number of alcoholic drinks a participant reported consuming each night when staying in drinking in a typical week prior to being exposed to the anti-binge drinking message.

Learning from the message is the mean of responses to two items used to rate the message on a 7-point Likert-type scale, with a higher mean score indicating more learning from the message: "I learned something from the message" (1 = Disagree Strongly, 7 = Agree

Strongly); and "I received new information from the message" (1 = Disagree Strongly, 7 = Agree Strongly).

Control Message: Drinking to excess leads to many problems in a person's life. Different types of people experience different types of problems, but most people who drink to excess experience a variety of difficulties. These can interfere with the person's quality of life. Drinking in moderation is the best choice. Don't Binge Drink!

Social Norms Message: When going out to the bar, or even staying in with friends, most K-State students could count the number of drinks they have on one hand. Sure there are a few exceptions that really stand out, but generally, K-State students do not drink alcohol in excess, and many don't drink at all. Don't be the exception to the rule! Don't Binge Drink!

Self-schema Matched Messages:

Warm-Communicative-Compassionate-Feeling Self-Schema Message: Excessive alcohol interferes with one's ability to fulfill their unique potential, making this potential fade. Too much alcohol reduces your capacity to be warm with others and communicate your true thoughts and feelings, hurting your relationships. Be True To Yourself And Those You Love. Don't Binge Drink!

Adventuresome-Skillful-Competitive-Spontaneous Self-Schema Message: Alcohol is actually a depressant. When too much is consumed, alcohol dulls the senses and slows a person down, thereby making it impossible for them to be the life of the party. Binge drinking actually limits the amount of fun and excitement you can experience in a night. Live The Exciting Life! Don't Binge Drink!

Versatile-Wise-Conceptual-Curious Self-Schema Message: Consuming excess alcohol kills brain cells (especially in those younger than 25), thus significantly reducing one's cognitive capacity. It makes people less mentally capable and curious. It's important to be rational and in control of your mind. Don't let too many drinks change your ability to think. Drink Smart, and Don't Binge Drink!

Responsible-Dependable-Helpful-Sensible Self-Schema Message: It's sensible to drink responsibly because excessive alcohol interferes with a person's ability to fulfill obligations. Binge drinkers are less concerned with the welfare of others than non-drinkers. You want to be responsible for yourself and those who depend on you. Be Responsible! Don't Binge Drink!

Table 6 Self-Monitoring x Message Condition Factorial Analysis of Covariance of Learning from the Message

Source	SS	df	MS	F	Partial η^2
Self-monitoring (SM)	3.54	1	3.54	1.37	.02
Message Condition (M)	41.04	2	20.52	7.94***	.19
M x SM	.52	2	.26	.10	.00
Pre-message Drinking	4.69	1	4.69	1.82	.03
Error	175.80	68	2.59		
Total	1241.00	75			

Note. All means and corresponding standard errors are adjusted for pre-message drinking behavior ($M = 4.64$, $SD = 5.24$). Pre-message drinking behavior is the sum of the number of alcoholic drinks a participant reported consuming each night when going out drinking and the number of alcoholic drinks a participant reported consuming each night when staying in drinking in a typical week prior to being exposed to the anti-binge drinking message.

Learning from the message is the mean of responses to two items used to rate the message on a 7-point Likert-type scale, with a higher mean score indicating more learning from the message: "I learned something from the message" (1 = Disagree Strongly, 7 = Agree Strongly); and "I received new information from the message" (1 = Disagree Strongly, 7 = Agree Strongly).

***$p = .001$

Table 7 Means and Standard Errors for Understanding/Clarity of the Message as a Function of Self-Monitoring and Message Condition

	Message Condition			
Self-monitoring	Control	Social Norms	Schema-Matched	Total
Low				
M	6.35	5.62	5.99	5.99
SE	.31	.36	.29	.19
N	15	11	17	43
High				
M	5.82	6.07	4.88	5.59
SE	.38	.33	.40	.22
N	10	13	9	32
Total				
M	6.08	5.85	5.44	5.79
SE	.25	.25	.25	.14
N	25	24	26	75

Note. All means and corresponding standard errors are adjusted for pre-message drinking behavior ($M = 4.64$, $SD = 5.24$). Pre-message drinking behavior is the sum of the number of alcoholic drinks a participant reported consuming each night when going out drinking and the number of alcoholic drinks a participant reported consuming each night when staying in drinking in a typical week prior to being exposed to the anti-binge drinking message.

Understanding/Clarity of the message is the mean of responses to two items used to rate the message on a 7-point Likert-type scale, with a higher mean score indicating greater understanding or perceived clarity of the message: "I understood the message very well" (1 =

Disagree Strongly, 7 = Agree Strongly); and "I found the message very clear" (1 = Disagree Strongly, 7 = Agree Strongly).

Control Message: Drinking to excess leads to many problems in a person's life. Different types of people experience different types of problems, but most people who drink to excess experience a variety of difficulties. These can interfere with the person's quality of life. Drinking in moderation is the best choice. Don't Binge Drink!

Social Norms Message: When going out to the bar, or even staying in with friends, most K-State students could count the number of drinks they have on one hand. Sure there are a few exceptions that really stand out, but generally, K-State students do not drink alcohol in excess, and many don't drink at all. Don't be the exception to the rule! Don't Binge Drink!

Self-schema Matched Messages:

Warm-Communicative-Compassionate-Feeling Self-Schema Message: Excessive alcohol interferes with one's ability to fulfill their unique potential, making this potential fade. Too much alcohol reduces your capacity to be warm with others and communicate your true thoughts and feelings, hurting your relationships. Be True To Yourself And Those You Love. Don't Binge Drink!

Adventuresome-Skillful-Competitive-Spontaneous Self-Schema Message: Alcohol is actually a depressant. When too much is consumed, alcohol dulls the senses and slows a person down, thereby making it impossible for them to be the life of the party. Binge drinking actually limits the amount of fun and excitement you can experience in a night. Live The Exciting Life! Don't Binge Drink!

Versatile-Wise-Conceptual-Curious Self-Schema Message: Consuming excess alcohol kills brain cells (especially in those younger than 25), thus significantly reducing one's cognitive capacity. It makes people less mentally capable and curious. It's important to be rational and in control of your mind. Don't let too many drinks change your ability to think. Drink Smart, and Don't Binge Drink!

Responsible-Dependable-Helpful-Sensible Self-Schema Message: It's sensible to drink responsibly because excessive alcohol interferes with a person's ability to fulfill obligations. Binge drinkers are less concerned with the welfare of others than non-drinkers. You want to be responsible for yourself and those who depend on you. Be Responsible! Don't Binge Drink!

Table 8 Self-Monitoring x Message Condition Factorial Analysis of Covariance of Understanding/Clarity of the Message

Source	SS	df	MS	F	Partial η^2
Self-monitoring (SM)	2.77	1	2.77	1.93	.03
Message Condition (M)	5.00	2	2.50	1.73	.05
M x SM	7.29	2	3.64	2.53	.07
Pre-message Drinking	2.00	1	2.00	1.39	.02
Error	97.99	68	1.44		
Total	2696.00	75			

Note. All means and corresponding standard errors are adjusted for pre-message drinking behavior ($M = 4.64$, $SD = 5.24$). Pre-message drinking behavior is the sum of the number of alcoholic drinks a participant reported consuming each night when going out drinking and the number of alcoholic drinks a participant reported consuming each night when staying in drinking in a typical week prior to being exposed to the anti-binge drinking message.

Understanding/Clarity of the message is the mean of responses to two items used to rate the message on a 7-point Likert-type scale, with a higher mean score indicating greater understanding or perceived clarity of the message: "I understood the message very well" (1 = Disagree Strongly, 7 = Agree Strongly); and "I found the message very clear" (1 = Disagree Strongly, 7 = Agree Strongly).

Table 9 Means and Standard Errors for Attitude toward Binge Drinking as a Function of Self-Monitoring and Message Condition

Self-monitoring	Control	Social Norms	Schema-Matched	Total
		Message Condition		
Low				
M	5.44	5.61	5.91	5.65
SE	.28	.32	.26	.17
N	15	11	17	43
High				
M	5.85	5.39	5.65	5.63
SE	.34	.30	.36	.19
N	10	13	9	32
Total				
M	5.64	5.50	5.78	5.64
SE	.22	.22	.22	.13
N	25	24	26	75

Note. All means and corresponding standard errors are adjusted for pre-message drinking behavior (*M* = 4.64, *SD* = 5.24). Pre-message drinking behavior is the sum of the number of alcoholic drinks a participant reported consuming each night when going out drinking and the number of alcoholic drinks a participant reported consuming each night when staying in drinking in a typical week prior to being exposed to the anti-binge drinking message.

Attitude toward binge drinking is the mean of responses to six items that were responded to on a 7-point Likert-type scale, with a higher score indicating more negative attitudes toward binge drinking: "Binge drinking is a _____ behavior" (1 = Good, 7 = Bad); "I _____ of binge

drinking" (1 = Approve, 7 = Disapprove); "I feel ____ toward binge drinking" (1 = Negative, 7 = Positive); "Binge drinking is ____" (1 = Awful, 7 = Nice); "Binge drinking is ____" (1 = Unpleasant, 7 = Pleasant); and "Binge drinking is ____" (1 = Unattractive, 7 = Attractive). The last four items were reverse scored.

Control Message: Drinking to excess leads to many problems in a person's life. Different types of people experience different types of problems, but most people who drink to excess experience a variety of difficulties. These can interfere with the person's quality of life. Drinking in moderation is the best choice. Don't Binge Drink!

Social Norms Message: When going out to the bar, or even staying in with friends, most K-State students could count the number of drinks they have on one hand. Sure there are a few exceptions that really stand out, but generally, K-State students do not drink alcohol in excess, and many don't drink at all. Don't be the exception to the rule! Don't Binge Drink!

Self-schema Matched Messages:

Warm-Communicative-Compassionate-Feeling Self-Schema Message: Excessive alcohol interferes with one's ability to fulfill their unique potential, making this potential fade. Too much alcohol reduces your capacity to be warm with others and communicate your true thoughts and feelings, hurting your relationships. Be True To Yourself And Those You Love. Don't Binge Drink!

Adventuresome-Skillful-Competitive-Spontaneous Self-Schema Message: Alcohol is actually a depressant. When too much is consumed, alcohol dulls the senses and slows a person down, thereby making it impossible for them to be the life of the party. Binge drinking actually limits the amount of fun and excitement you can experience in a night. Live The Exciting Life! Don't Binge Drink!

Versatile-Wise-Conceptual-Curious Self-Schema Message: Consuming excess alcohol kills brain cells (especially in those younger than 25), thus significantly reducing one's cognitive capacity. It makes people less mentally capable and curious. It's important to be rational and in control of your mind. Don't let too many drinks change your ability to think. Drink Smart, and Don't Binge Drink!

Responsible-Dependable-Helpful-Sensible Self-Schema Message: It's sensible to drink responsibly because excessive alcohol interferes with a person's ability to fulfill obligations.

Binge drinkers are less concerned with the welfare of others than non-drinkers. You want to be responsible for yourself and those who depend on you. Be Responsible! Don't Binge Drink!

Table 10 Self-monitoring x Message Condition Factorial Analysis of Covariance of Attitude Toward Binge Drinking

Source	SS	df	MS	F	Partial η^2
Self-monitoring (SM)	.01	1	.01	.01	.00
Message Condition (M)	.90	2	.45	.40	.01
M x SM	1.68	2	.84	.74	.02
Pre-message Drinking	38.83	1	38.83	34.14*	.33
Error	170.48	68	2.51		
Total	1735.25	75			

Note. All means and corresponding standard errors are adjusted for pre-message drinking behavior ($M = 4.64$, $SD = 5.24$). Pre-message drinking behavior is the sum of the number of alcoholic drinks a participant reported consuming each night when going out drinking and the number of alcoholic drinks a participant reported consuming each night when staying in drinking in a typical week prior to being exposed to the anti-binge drinking message.

Attitude toward binge drinking is the mean of responses to six items that were responded to on a 7-point Likert-type scale, with a higher score indicating more negative attitudes toward binge drinking: "Binge drinking is a _____ behavior" (1 = Good, 7 = Bad); "I _____ of binge drinking" (1 = Approve, 7 = Disapprove); "I feel _____ toward binge drinking" (1 = Negative, 7 = Positive); "Binge drinking is _____" (1 = Awful, 7 = Nice); "Binge drinking is _____" (1 = Unpleasant, 7 = Pleasant); and "Binge drinking is _____" (1 = Unattractive, 7 = Attractive). The last four items were reverse scored.

***$p < .001$

Table 11 Means and Standard Errors for Perception of Severity of Binge Drinking Consequences as a Function of Self-Monitoring and Message Condition

Self-monitoring	Message Condition			
	Control	Social Norms	Schema-Matched	Total
Low				
M	6.47	6.40	6.50	6.47
SE	.26	.30	.24	.15
N	15	11	17	43
High				
M	5.45	6.15	6.88	6.19
SE	.32	.28	.33	.18
N	10	13	9	32
Total				
M	6.00	6.28	6.71	6.33
SE	.20	.20	.21	.12
N	25	24	26	75

Note. All means and corresponding standard errors are adjusted for pre-message drinking behavior (*M* = 4.64, *SD* = 5.24). Pre-message drinking behavior is the sum of the number of alcoholic drinks a participant reported consuming each night when going out drinking and the number of alcoholic drinks a participant reported consuming each night when staying in drinking in a typical week prior to being exposed to the anti-binge drinking message.

Perceptions of the severity of binge drinking consequences is the mean of responses to two items that were responded to on a 7-point Likert-type scale, with a higher score indicating greater perception of the severity of binge drinking consequences: "Binge drinking can have

serious negative consequences" (1 = Disagree Strongly, 7 = Agree Strongly); and "If you make the wrong decisions about your drinking behavior, there is _____ to lose" (1 = Little, 7 = A Lot).

Control Message: Drinking to excess leads to many problems in a person's life. Different types of people experience different types of problems, but most people who drink to excess experience a variety of difficulties. These can interfere with the person's quality of life. Drinking in moderation is the best choice. Don't Binge Drink!

Social Norms Message: When going out to the bar, or even staying in with friends, most K-State students could count the number of drinks they have on one hand. Sure there are a few exceptions that really stand out, but generally, K-State students do not drink alcohol in excess, and many don't drink at all. Don't be the exception to the rule! Don't Binge Drink!

Self-schema Matched Messages:

Warm-Communicative-Compassionate-Feeling Self-Schema Message: Excessive alcohol interferes with one's ability to fulfill their unique potential, making this potential fade. Too much alcohol reduces your capacity to be warm with others and communicate your true thoughts and feelings, hurting your relationships. Be True To Yourself And Those You Love. Don't Binge Drink!

Adventuresome-Skillful-Competitive-Spontaneous Self-Schema Message: Alcohol is actually a depressant. When too much is consumed, alcohol dulls the senses and slows a person down, thereby making it impossible for them to be the life of the party. Binge drinking actually limits the amount of fun and excitement you can experience in a night. Live The Exciting Life! Don't Binge Drink!

Versatile-Wise-Conceptual-Curious Self-Schema Message: Consuming excess alcohol kills brain cells (especially in those younger than 25), thus significantly reducing one's cognitive capacity. It makes people less mentally capable and curious. It's important to be rational and in control of your mind. Don't let too many drinks change your ability to think. Drink Smart, and Don't Binge Drink!

Responsible-Dependable-Helpful-Sensible Self-Schema Message: It's sensible to drink responsibly because excessive alcohol interferes with a person's ability to fulfill obligations. Binge drinkers are less concerned with the welfare of others than non-drinkers. You want to be responsible for yourself and those who depend on you. Be Responsible! Don't Binge Drink!

Table 12 Self-Monitoring x Message Condition Factorial Analysis of Perceptions of the Severity of Binge Drinking Consequences

Source	SS	df	MS	F	Partial η^2
Self-monitoring (SM)	1.39	1	1.39	1.41	.02
Message Condition (M)	6.08	2	3.04	3.09*	.01
M x SM	4.76	2	2.38	2.41	.07
Pre-message Drinking	3.11	1	3.11	3.16	.04
Error	66.98	68	.99		
Total	3104.00	75			

Note. All means and corresponding standard errors are adjusted for pre-message drinking behavior ($M = 4.64$, $SD = 5.24$). Pre-message drinking behavior is the sum of the number of alcoholic drinks a participant reported consuming each night when going out drinking and the number of alcoholic drinks a participant reported consuming each night when staying in drinking in a typical week prior to being exposed to the anti-binge drinking message.

Perceptions of the severity of binge drinking consequences is the mean of responses to two items that were responded to on a 7-point Likert-type scale, with a higher score indicating greater perception of the severity of binge drinking consequences: "Binge drinking can have serious negative consequences" (1 = Disagree Strongly, 7 = Agree Strongly); and "If you make the wrong decisions about your drinking behavior, there is _____ to lose" (1 = Little, 7 = A Lot).
*$p = .05$