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# Examining I-sharing as a Motivation for Social Tuning Alcohol Attitudes and Drinking Intentions Among College Students

Timothy Carnevale

# EXAMINING I-SHARING AS A MOTIVATION FOR SOCIAL TUNING ALCOHOL ATTITUDES AND DRINKING INTENTIONS AMONG COLLEGE STUDENTS

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Timothy Carnevale

Indiana University of Pennsylvania

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Indiana University of Pennsylvania
School of Graduate Studies and Research
Department of Psychology

We hereby approve the dissertation of

Timothy Carnevale

Candidate for the degree of Doctor of Psychology

_____ _____
Anson E. Long, Ph.D.
Professor of Psychology, Advisor

_____ _____
Maureen C. McHugh, Ph.D.
Professor of Psychology

_____ _____
Derek R. Hatfield, Ph.D.
Professor of Psychology

ACCEPTED

_____ _____
Randy L. Martin, Ph.D.
Dean
School of Graduate Studies and Research

Title: Examining I-sharing as a Motivation for Social Tuning Alcohol Attitudes and Drinking Intentions Among College Students

Author: Timothy Carnevale

Dissertation Chair: Dr. Anson E. Long

Dissertation Committee Members: Dr. Maureen C. McHugh
Dr. Derek R. Hatfield

The current study examined a computer-driven intervention utilizing I-sharing (i.e., shared subjective experience) to reduce alcohol use intentions among participants. Specifically, this study sought to test whether I-sharing could foster affiliative motivation and lead participants to socially tune their alcohol use intentions to those of a faux interaction partner. The sample consisted of 199 undergraduate students at Indiana University of Pennsylvania. After completing a pre-intervention measure of their intention to drink alcohol, participants were "matched" with a faux partner and randomly assigned to an I-sharing condition, no I-sharing condition, or no information condition. After undergoing the I-sharing manipulation, participants rated their liking for and perceived similarity with their interaction partner. Participants wrote a testimonial to their partner about their alcohol use, and then read a testimonial that indicated that their partner did not drink alcohol. Finally, they completed a post-intervention measure of their intention to drink alcohol, as well as measures of their attitudes towards alcohol and those who do not drink alcohol. Participants were invited to complete an online follow-up two weeks after their study date. Seventeen participants completed the follow-up. These participants were asked to report their use of alcohol since the study date and to rate their attitudes towards alcohol and those who do not drink alcohol.

Replicating previous research, the I-sharing manipulation increased liking and feelings of similarity with the partner. However, results for the alcohol-related intentions and attitudes measures did not confirm predictions. Participants in the I-sharing condition did not report

greater decreases in their intention to drink alcohol compared to the other conditions. Instead, the intention to drink alcohol was reduced across the conditions. Furthermore, no differences were found between the conditions regarding attitudes. Unfortunately, the sample size of the follow-up was not large enough to draw meaningful conclusions.

These results indicate that I-sharing may not have led to the social tuning of alcohol use intentions. However, the intervention was successful at decreasing alcohol use intentions across the conditions. This finding raises important questions about which element(s) of the procedure were responsible for the results. Multiple possibilities are explored in the Discussion.

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# CHAPTER I

## DEFINING THE PROBLEM

Alcohol use has long been considered a public health problem that contributes to death and injury in the United States and around the world (CDC, 2016; Rehm, Mathers, Popova, Thavorncharoensap, Teerawattananon, & Patra, 2009). There are many factors that impact drinking rates and the potential for heavy drinking. These factors include the following: law enforcement policies surrounding drinking, access to alcohol, social acceptability, family history of drinking, social portrayals of drinking, and individual psychological and biological influences (e.g. genetics) (CDC, 2016; Chaloupka & Wechsler, 1996; Cloninger, Bohman, & Sigvardsson, 1981; Enoch & Goldman, 2001; Wechsler & Nelson, 2008; Weitzman, Folkman, Folkman, & Wechsler, 2003). While alcohol use continues to be a national problem in the United Sates, it can be particularly harmful to college students (CDC, 2016).

Despite extensive attempts to prevent and curb heavy alcohol consumption among college students, it remains a serious and pervasive problem in the United States. The prevalence and negative impact of this heavy alcohol consumption has been researched for decades. Much of this research has found that heavy drinking in college can cause damage to the student, damage to others (including peers and community members), and damage to the institution as a whole (Hingson, Heeren, Winter, & Wechsler, 2005; Johnston, O'Malley, Bachman, & Schulenberg, 2011; Nelson, Ziming, Lee, Weitzman, & Wechsler, 2009). For the student, this damage can be benign, but it also could lead to serious injury and/or death. For example, benign consequences of drinking may include having a hangover, losing personal items, and missing class (Wechsler & Tobin, 2008). More serious consequences of drinking may include alcohol poisoning, alcohol related accidents (e.g. motor vehicle accidents), and unwanted and sometimes unprotected sexual activity (Naimi, Nelson, & Brewer, 2009; Wechsler & Tobin, 2008).

Additionally, the National Institute on Alcohol Abuse and Alcoholism (NIAAA, 2005) reports that drinking in older adolescence is associated with developing alcohol-related problems throughout the life span, including the potential for an alcohol-related mental illness. In particular, people who start drinking earlier are at a higher risk for developing Alcohol Use Disorder at some point in their life (American Psychiatric Association, 2014). According to the Diagnostic and Statistical Manual of Mental Disorders Fifth Edition (DSM-5), the criteria for Alcohol Use Disorder are typically met for the first time in a person's late teens or early to mid 20's (APA, 2014). In addition, the DSM-5 reports that the majority of individuals who develop Alcohol Use Disorder do so by their 30s (APA, 2014). Developing Alcohol Use Disorder can have serious consequences for young adults that include monetary issues, legal troubles, and the start of lifelong psychological and physical illnesses (APA, 2013). These potential consequences, both benign and serious, set the stage for understanding why drinking in college is such a problem in the United States.

There has been a considerable amount of research into the development and maintenance of interventions targeting alcohol consumption and the related outcomes on college campuses (U.S. Department of Education, 2008). Since the 1990's, colleges and universities have developed and implemented interventions aimed to address this issue (U.S. Department of Education, 2008). Using outcome research, these colleges and universities have established evidence-based programs and interventions (U.S. Department of Education, 2008). In 2002, the National Advisory Council's Task Force on Alcohol Abuse and Alcoholism recommended that all colleges and universities in the United States implement alcohol consumption interventions that have been well researched and documented (NIAAA, 2002). Today, many colleges and universities are utilizing alcohol use prevention programs and interventions (NIAAA, 2015).

Despite implementation of well-established programs and interventions, recent statistics indicate that alcohol consumption among college students and the associated problems linked to alcohol use are still problematic (Johnson, O'Malley, Bachman, Schulenberg, & Miech, 2016; SAMHSA, 2014; Southern Illinois University Carbondale, 2014).

There are a variety of factors that influence the success of alcohol interventions and programs targeted at college students. The NIAAA notes that successful interventions and programs on college campuses involve the following: creating a healthy environment on campus for students, promoting healthy behaviors, establishing collaborations with community institutions, and maintaining an effective implementation strategy for the program (NIAAA, 2002). However, many programs and interventions suffer from substantial limitations that can make implementation difficult and impact their overall success. These limitations include the monetary cost and the required campus resources for implementation. Researchers have also noted that many campus-level interventions and programs fail to address peer and social influences on alcohol use and the associated outcomes (Lewis & Neighbors, 2004; Neighbors, Lee, Lewis, Fossos, & Larimer, 2007). These limitations have created a need for new intervention strategies targeting college students.

Research has found that one of the best predictors of alcohol use among college students is their perception of the alcohol use norms on campus (Neighbors et al., 2007). Students tend to drink more when they believe that their peers are also drinking. Research into this peer influence has found that college students decrease their alcohol use when they are presented with information showing that their peers do not consume alcohol (Berkowitz, 2004; Bosari & Carey, 2003). Additionally, research has found that this peer influence is more impactful when the individual feels similar and proximal to their social reference group (Bosari

& Carey, 2001, 2003; Osgood, Ragan, Wallace, Gest, Feinberg, & Moody, 2013). The current study aims to test a mechanism for reducing the intention of college students to consume alcohol in the future that utilizes this type of peer influence.

The current study aimed to create a novel intervention using peer influence to reduce alcohol use intentions among college students. The present research utilized the social-psychological concept of *I-sharing*, or sharing identical, in-the-moment, subjective experiences (Pinel, Long, Landau, & Pyszczynski, 2006) to create feelings of liking for another person. Research has shown that people socially tune, or adjust, their attitudes to make them more similar to those of people whom they like and with whom they desire to form a social bond (Hardin & Conley, 2001; Lowery, Hardin, & Sinclair, 2001). Because I-sharing increases liking (Pinel et al., 2006), it was expected that people would socially tune their attitudes toward a person with whom they I-share. If so, then learning that a person with whom one I-shares chooses not to drink alcohol may lead people to socially tune their attitudes to make them less inclined to drink alcohol themselves.

To examine this idea, in the current study, participants interacted with a pretend partner on the computer. Participants either I-shared with their partner, did not I-share with their partner, or received no information about I-sharing. Then they learned that their partner does not drink alcohol. Intention to drink alcohol, attitudes toward alcohol, and attitudes toward people who do not drink alcohol were measured. It was hypothesized that participants in the I-sharing condition would exhibit a decrease in intention to drink alcohol, along with diminished attitudes toward alcohol and improved attitudes toward people who do not drink alcohol. The current study is the first to apply I-sharing and social tuning in an alcohol-use intervention for college students. Thus, the present research extends the literature on both of these constructs, while it

simultaneously tests the effectiveness of a novel intervention for reducing alcohol consumption among college students.

CHAPTER II

REVIEW OF THE RELEVANT LITERATURE

## Alcohol Statistics and Studies

### Recent Statistics

According to The Centers for Disease Control and Prevention (CDC), binge drinking (five or more drinks for men and four or more drinks for women, in about a two-hour span) is the most prevalent among individuals ages 18-34 compared to other age groups (CDC, 2012; NIAAA, 2004). This age range is most associated with college attendance and coincides with the developmental time period known as emerging adulthood (Arnett, 2000). Reports and studies have indicated that alcohol consumption peaks at this developmental time period and appears to be especially high during late high school and early college years (CDC, 2012; Fromme, Corbin, & Kruse, 2008; Scott-Sheldon, Carey, Elliot, Garey & Carey, 2014). The 2015 National Survey of Drug Use and Health found that around 20% of individuals in the United States aged 12-20 drink alcohol and 13% reported binge drinking in the last 30 days. For college students in particular, heavy drinking continues to be a concern and college students have been identified as a group at risk for harmful alcohol related consequences (Blanco et al., 2008; Capron & Schmidt, 2012; Dvorak, Lamis, & Malone, 2013; Hingson, Heeren, Winter, & Wechsler, 2005; White & Hingson, 2014).

### Monitoring the Future

According to the 2015 Monitoring the Future survey, binge drinking is still a pervasive issue among college students (Johnson et al., 2016). Despite overall decreases in college drinking over the last decade, binging still remains high among college students (Johnson et al., 2016). The survey found that 31.9% of college students reported binge drinking (classified as

having five or more drinks in a row) in the past two weeks compared to 23.7% of the non-college sample group (Johnson et al., 2016). In addition to the statistics on binge drinking, the survey found that 38.4% of the college student population reported being intoxicated by alcohol in the past month while only 24.9% of the non-college sample reported being drunk over the same time period (Johnson et al., 2016). These results help illustrate the degree of binge drinking and alcohol intoxication among college students in the United States.

**The Harvard Studies**

The Harvard University School of Public Health College Alcohol Surveys (CAS) provide an important window into the drinking habits of college students (Wechsler & Nelson, 2008). The surveys were conducted in 1993, 1997, 1999, and 2001. These studies helped define the concept of binge drinking, and they have allowed researchers to observe trends in drinking behavior among college students in the United States. The researchers who conducted these studies defined binge drinking as consuming five or more drinks in a single drinking session for males and four or more for females (Wechsler, Lee, Kuo & Lee, 2000; Wechsler & Nelson, 2008). The most recent survey, which was conducted in 2001 and included more than 10,000 full time college students randomly selected from 119 four-year colleges and universities, found that the rate of binge drinking in college students was comparable to the rate observed in the previous surveys, suggesting no downward trend in binge drinking over time. The researchers found that roughly two in five respondents reported binge drinking in the previous two-week period, and that these students experienced higher rates of educational, health, and social problems than students who did not binge drink (Wechsler, Lee, Kuo, Seibring, Nelson, & Lee, 2002; Wechsler, Nelson, & Weitzman. 2000). Results of the 2001 survey, which classified 43.6% of the undergraduate respondents as binge drinkers, supported the findings of the earlier surveys,

which classified 44.1% of respondents as binge drinkers in 1993, 42.7% in 1997, and 44.0% in 1999 (Wechsler, Dowdall, Maenner, Gledhill-Hoyt, & Lee, 1998; Wechsler et al., 2002; Wechsler, Lee, Kuo, & Lee 2010). Perhaps surprisingly, the surveys showed that alcohol consumption actually decreased from 81% of respondents in 1993 to 77.4% of respondents in 2001. Despite this decrease in alcohol consumption, however, frequent binge drinking actually increased from 21.3% in 1993 to 23.5% in 2001. This increase occurred for both men and women (Wechsler et al., 2002).

The researchers found that college students under the legal drinking age of 21 differed significantly in alcohol-related problems from college students who were aged 21 and older. Underage students were more likely to do something they regretted, forget where they were or what they did, cause property damage, get in trouble with the police, and become injured because of their alcohol use. Students 21 and older, on the other hand, were more likely than their underage counterparts to drive after consuming alcohol, miss class, and engage in unprotected sexual activity (Wechsler et al., 2002). The authors noted that these alcohol-related problems experienced by both underage students and students aged 21 and older increased over time across the four surveys.

According to the 1993 Harvard study, there were many factors that raised the probability that a student would binge drink. (Wechsler et al., 2000). The 2001 survey expanded on these findings by discovering that students who lived in a less controlled environment (e.g. fraternity) tended to binge drink more than students living in more controlled environments (e.g. parent's house). Additionally, the 2001 survey found that students tended to drink more off-campus than on-campus (Wechsler et al., 2002). On average, underage students were more likely to get drunk

three or more times a month, were more likely to drink "to get drunk," and reported consuming more drinks at an average occasion than students 21 and older (Wechsler et al., 2002).

After the 1993 survey, Wechsler, Davenport, Dowdall, Moeykens, and Castillo (1994) observed that the Harvard CAS study was the first survey of college students' alcohol use to recruit a representative national sample and the first large-scale study to define binge drinking as five drinks for males and four drinks for females in a two-hour period. The Harvard studies remain important contributions to the understanding of college drinking habits and the harmful outcomes associated with college drinking. Recent reports such as the SAMHSA 2014 National Survey on Drug Use and Health have found that binge drinking remains a serious problem among college students and that many of the conclusions of the Harvard studies remain true today, especially related to the negative outcomes associated with binge drinking (Fuertes & Hoffman, 2016; Wechsler & Nelson, 2008).

**Core National Survey**

The Core Alcohol and Drug Survey is an ongoing nationwide survey conducted by Southern Illinois University at Carbondale to determine rates of alcohol use, other drug use, and the associated outcomes of alcohol and drug use on college campuses. Additionally, the Core Alcohol and Drug Survey examines the attitudes and perceptions of college students concerning alcohol and drugs (Southern Illinois University Carbondale, 2014). In the most recent wave of data collection, surveys were distributed to college campuses across the United States, including Indiana University of Pennsylvania (IUP). Development of the survey was funded by the United States Department of Education, and the survey contains 39 self-report questions. The most recent results contain data from 143,191 respondents from across the United States from 2011 to 2013 (Southern Illinois University Carbondale, 2014). The results revealed that 81.4%

of the student respondents reported drinking alcohol in the past year. In addition, 68.7% of the students consumed alcohol in the past 30 days, 61.8% of underage students drank alcohol in the previous 30 days, and 43.9% reported binge drinking (defined here as consuming five or more drinks in one sitting) in the previous two weeks (Southern Illinois University Carbondale, 2014).

Of particular note, 87.4% of student respondents believed the average student on campus uses alcohol once a week or more. For 82% of the respondents, drinking alcohol was thought to be the center of social life for male students and for 73.1% of the respondents, drinking alcohol was thought to be the center of social life for female students (Southern Illinois University Carbondale, 2014). These results show that many students have a perception that college students on campus drink alcohol and that it is important to the social life of both male and female students. Additionally, 51.4% of the respondents thought that drinking on their campus was about the same as other campuses, and 34.4% thought that drinking was less on their campus compared to other campuses (Southern Illinois University Carbondale, 2014). Taken together, many college students believed that alcohol use is pervasive on college campuses and that students from their schools drink about the same or less than students from other universities. Although the survey results reveal higher rates of alcohol consumption than the rates seen in most national surveys, they are notable for illustrating perceptions of drinking norms on campus (Johnson et al., 2016; SAMHSA, 2014).

**Indiana University of Pennsylvania Alcohol Statistics**

As noted above, the 2011 Core Alcohol and Drug Survey involved IUP students among the other colleges and universities. Data from IUP alone was provided to the university. The survey found that 73.2% of respondents reported consuming alcohol in the last year. Sixty percent of respondents reported drinking alcohol in the prior 30 days and 43.7% of respondents reported binge drinking in the last two weeks (Southern Illinois University Carbondale, 2011). Similar to the national statistics, 84.8% of respondents reported that they believe the average student on campus uses alcohol once a week or more. Additionally, 86.3% of the respondents said they saw drinking as central in the social life of male students and 79.2% of the respondents said they saw drinking as central in the social life of female students (Southern Illinois University Carbondale, 2011). These statistics reveal that students at IUP have similar perceptions as students at other colleges and universities regarding the drinking norms on campus.

According to the 2016 PASSHE Alcohol & Other Drug Survey, 42.3% of IUP students reported drinking alcoholic beverages four times per month or less, and 21.3% reported drinking alcoholic beverages two times per week or more (Schiefelbein, 2016). The 2016 PASSHE Alcohol & Other Drug Survey also noted that some students reported money problems as a result of their alcohol or drug use, have missed class and not handed in assignments on time because of their alcohol or drug use, have driven with someone who has consumed alcohol one or more times in the past month, have blacked out or had monetary problems one or two times in the last three months, have passed out in the last three months, and have engaged in unsafe sexual activity one or more times in the last three months (Schiefelbein, 2016). These findings reveal that, not only are students drinking alcohol at IUP, but some are also having problems related to

their alcohol or drug use. Taken together, the results of the survey suggest that IUP students report drinking at similar levels to national samples; alcohol use is prevalent on campus; and alcohol consumption among college students represents a significant problem.

## Alcohol Prevention on College Campuses

### Model Programs

With worries about the level of alcohol use and associated negative outcomes among students on college campuses, the United States Congress has authorized the U.S. Department of Education to identify and promote effective alcohol prevention programs on college campuses since 1999 (U.S. Department of Education, 2008). Programs on college campuses were tasked to maintain, evaluate, and/or improve their alcohol and drug prevention efforts. Additionally, resources were given to disseminate information to other institutions (U.S. Department of Education, 2008). There are many strategies that colleges and universities have used to combat alcohol use and drug use among students. The following strategies have had mixed results, but can have a positive influence on campus culture: many colleges and universities have formed partnerships with institutions in their local communities including bars, restaurants, and stores that sell alcohol; strengthened academic requirements; and instituted policies that involve scheduling classes on Fridays, and keeping libraries and other student resources open later (U.S. Department of Education, 2008). Additionally, school programs have monitored fraternities more closely, provided more alcohol-free, school-sanctioned recreational events, and launched media campaigns to inform students about alcohol-related statistics (U.S. Department of Education, 2008). Schools have also attempted to create greater punitive measures on campus and have notified parents more frequently of infractions related to alcohol and drug use (U.S.

Department of Education, 2008). As noted above, these strategies have had mixed effects on alcohol and drug use among college students.

In order to form better alcohol and drug prevention strategies on college campuses, the U.S. Department of Education has awarded nearly $3.5 million to institutions of higher education since 1999 (U.S. Department of Education, 2008). Through these grant awards, 34 programs were designated as model programs (U.S. Department of Education, 2008). To be given this distinction, a college or university was required to describe an innovative program or policy that targeted alcohol and other drug prevention on campus. Institutions also had to provide evidence that the innovative program or policy was associated with a reduction in the problems resulting from alcohol or other drug use on campus. The 34 chosen model programs have implemented a variety of strategies that were shown to have positive effects in reducing the problems associated with alcohol and drug use (U.S. Department of Education, 2008).

From among these 34 institutions, notable institutions and programs that will be described here include the following: Auburn University, Lehigh University, San Diego State University, The State University of New York at New Paltz, University at Albany, State University of New York, and Washington State University (U.S. Department of Education, 2008). These institutions were chosen for discussion for their uniqueness and innovative nature, as many of these programs were used to develop subsequent programs in other universities (U.S. Department of Education, 2008).

Auburn University's Health Behavior Assessment Center provides services to college students who have exhibited problems related to alcohol use. The program utilizes the Brief Alcohol Screening and Intervention for College Students (BASICS; Dimeff, 2000). The BASICS program has students complete a questionnaire about their drinking and have one or

two individual meetings with a trained counselor. BASICS utilizes the principles of motivational interviewing, with the counselor behaving in a supportive rather than confrontational manner to increase students' motivation to reduce their alcohol use. Students in the BASICS program also receive feedback about their drinking habits and are given information concerning the drinking behaviors of their fellow students in order to correct misconceptions about the alcohol use of their peers (U.S. Department of Education, 2008). During the 1999-2000 academic school year, Auburn University reported that students in the BASICS program reduced the number of alcoholic drinks they consumed and the frequency of heavy drinking both by about 2% (U.S. Department of Education, 2008).

Lehigh University's program is entitled Involved Multi-Partners in Achieving a Cultural Transformation (IMPACT). IMPACT was established as a campus and community coalition to address the problems of binge drinking on campus and the many ancillary effects (U.S. Department of Education, 2008). The program was designed to transform the campus and the community to make it more socially acceptable for students not to drink by expanding the number of alcohol-free social, recreational, and residential activities on campus. IMPACT also involved creating coalitions with local law enforcement and business owners. IMPACT was found to be successful at increasing the number of students living in substance-free housing, increasing communication between the school and law enforcement officials, creating a better coalition with local bars and taverns, and reducing the overall number of alcohol-related crimes on campus during the 2000-2001 academic year (U.S. Department of Education, 2008).

San Diego State University awarded funds from the U.S. Department of Education for using a Community/Collegiate Alcohol Partnership program (C-CAPP). C-CAPP is a comprehensive alcohol prevention program that has been ongoing since 1997. C-CAPP aims to

use data-driven alcohol prevention techniques to change the environmental conditions on campus. The goals of the program were to reduce heavy-episodic drinking and related problems, and to reduce alcohol-related promotions and advertisements on campus (U.S. Department of Education, 2008). C-CAPP built a coalition of campus leaders, community leaders, law enforcement personnel, businesses, and researchers to develop and appraise alcohol-prevention strategies for the college campus. According to the U.S. Department of Education (2008), San Diego State University's C-CAPP program has led to a decrease in reported heavy drinking by students in a two-week period by about 31%. Additionally, the program has led to smarter law enforcement efforts that have curbed partying in the surrounding area (U.S. Department of Education, 2008).

The State University of New York at New Paltz's program has been in use since 1986. This program has used a comprehensive model to combine community collaborations and social norms education to overall reduce drinking among college students on campus. The goals for the program at New Patz were to "(1) reduce high-risk alcohol use, (2) make it acceptable not to use alcohol, (3) ensure safety through the institutional and cultural intolerance of misuse, and (4) correct incoming students' misperceptions about campus drinking behavior" (U.S. Department of Education, 2008, p. 26). Like other programs, the program targets social norms on campus and collaboration with local business owners and law enforcement. The program was successful at decreasing high-risk behaviors, alcohol-related public misconduct, and alcohol-related personal problems from 1992 to 1996 (U.S. Department of Education, 2008).

The University at Albany, State University of New York has two programs that received awards for being model programs. The first is called Middle Earth: Students Helping Students. The Middle Earth program was developed in the 1970's as a peer-to-peer counseling and

education program. The program utilized students at University at Albany, State University of New York to counsel and educate other students about alcohol and drug use. The outreach program focused on providing information to students regarding social norms, the negative effects of alcohol, and conflict resolution strategies they can use with peers regarding or involving alcohol and other drugs. The Middle Earth program utilized a peer hotline, outreach, and the Middle Earth players, who put on plays and other performances for students (U.S. Department of Education, 2008).

The other model program from the University at Albany, State University of New York is the Committee on University and Community Relations initiative to create a university-wide social norms campaign. The initiative, which is sponsored by the Comprehensive Alcohol and Other Drug Abuse Prevention Program, has been in existence since 1990. The project aims to deliver social norm information to the student body through unique mechanisms designed to engage students. The goals of the project include, "(1) to reduce high-risk drinking rates and associated high-risk behaviors and increase protective behaviors in on-campus and off-campus students; (2) to correct misperceptions of the alcohol use rates of University at Albany students, particularly those of off-campus students, held by members of the campus and in the local community; (3) to identify and describe the effective ingredients of a successful campus and community coalition; and (4) to institutionalize effective program components and disseminate information concerning the effective components of this project to institutions of higher education on local, state, and national levels" (U.S. Department of Education, 2008, p. 28). Both the Middle Earth and the Committee on University and Community Relations were reported to be successful at making students more aware of the drinking and drug use norms on campus and creating coalitions among the campus and the community.

The last notable program is the Washington State University's Project Culture Change—Greek System. The program uses small group interventions that challenge perceived alcohol norms to reduce alcohol abuse in selected high-consuming populations. Developed in 1998, the program aims to reduce misconceptions about alcohol use among the campus fraternities and sororities. The interventions are delivered to target populations in small groups in 45-minute sessions. Survey data gathered before and after the short interventions indicated decreases in the quantity of drinks per occasion and increases in accurate perceptions of student drinking attitudes and behaviors (U.S. Department of Education, 2008).

Common themes among the programs listed above and the other programs not mentioned involve collaboration among campus and community officials, and unique ways of altering and educating students about alcohol-related social norms. In particular, many of the programs attempt to educate students about the drinking norms on campus and the potential harmful effects of alcohol use. While these programs have been successful at reducing alcohol consumption and related problems, these programs are often costly and require substantial campus resources.

**Alternative Models**

Other models for reducing alcohol use among college students have also been explored. These models are typically motivational in nature and involve the principles of motivational interviewing (Ajzen & Madden, 1986; Miller & Rollnick, 1991; Neal & Carey, 2003). Motivational interventions that involve the development of discrepancy through the use of personalized alcohol feedback have shown some success at reducing the intention to drink alcohol (Agostinelli, Brown, & Miller; 1995; Bosari & Carey, 2000; Neal & Carey, 2003). These interventions target a student's own reasons for wanting to change their alcohol use, and highlight the benefits that changing their alcohol use can have on their life (Neal & Carey, 2003).

Additionally, these approaches aim to use a decisional balance to highlight all the reasons the student chooses to drink and all the reasons that would lead the student to choose not to drink (Miller & Rollnick, 1991). These interventions suffer from the same problems as the notable programs described above; they usually require multiple sessions, trained interventionists, and campus resources. Additionally, the impact of these motivational interventions on actual drinking behavior has not been fully elucidated (Neal & Carey, 2003).

Strategies derived from the theory of reasoned action and planned behavior have been used to predict alcohol use among college students, but so far have not been used to reduce rates of drinking (Johnston & White, 2003; Norman & Connor, 2006). Typically, these researchers have used students' attitudes concerning alcohol use as a predictor for alcohol use. Norman and Connor (2006) suggest that this work may have important implications for potential future intervention strategies. In particular, the researchers found that attitudes towards drinking were the strongest predictor of binge-drinking intentions. The researchers suggest that successful intervention strategies will be ones that target the social context of drinking behaviors. This would include altering social environments, promoting safe drinking models through the media, and targeting social influences, such as peers. Advances like these are positive steps towards reducing alcohol consumption on college campuses, but more needs to be done and different techniques still need to be investigated (U.S. Department of Education. 2008).

## Peer Influence on Alcohol Use

College students' drinking behaviors can be impacted by their peers and those they perceive as being similar to them. In a review, Borsari and Carey (2001) explained that college students often encourage their peers to drink alcohol both directly (e.g. pressuring each other to attend a party) and indirectly (e.g. modeling). In addition, heightened perceptions of peers'

alcohol use have been associated with heavier alcohol use (Borsari & Carey, 2001; Borsari & Carey 2003; Lewis & Neighbors, 2004). Research has found that peer alcohol drinking norms were one of the best predictors of college students' alcohol use (Neighbors et al., 2007).

The way peers influence each other can be explained through traditional and contemporary social psychological research and theory, which suggest that the peer reference groups to which an individual belongs are more salient to the individual than peer reference groups to which an individual is only loosely connected (Bosari & Carey, 2001; Neighbors et al., 2011; Osgood et al., 2013). For example, a female college student in two sororities would belong to multiple reference groups. She would belong to a female reference group, a college student reference group, and two sorority reference groups. This student's sorority reference groups may be more salient and meaningful than being a college student or being female. If that were the case, then the peer influence from her sororities would be more impactful than the peer influence from college students more generally or from females more generally.

Furthermore, research has found that proximal reference groups are more likely than distal reference groups to influence alcohol use in college students, because proximal reference groups are more salient or relevant to the individual (Bosari & Carey, 2003; Lewis & Neighbors, 2004; Lewis & Neighbors, 2006). In the example above, let's say the student belongs to an on-campus sorority and an off-campus sorority. The on-campus sorority may be a more salient reference group than the off-campus sorority because it is more proximal to the student. When students perceive that their proximal social reference group is engaging in alcohol use, their own alcohol use can increase (Borsari & Carey, 2001; Lewis & Neighbors, 2004; Neighbors et al., 2011). Recent research has found that this peer influence on alcohol use among college students can even occur online through social media (Huang et al., 2014; Litt & Stock, 2011). Litt and

Stock (2011) observed that social media and the internet allows college students to perceive drinking on campus as being more prevalent than it actually is. Additionally, it may be the case that the internet allows increased proximity among reference groups that were usually more distal because of the ease of connectivity. Huang et al. (2014) found that exposure to their friend's online pictures of partying and/or drinking was associated with smoking and alcohol use. While it seems clear that peer influence and perceived similarity can increase alcohol use, can peer influence and similarity actually decrease alcohol use?

**Social Norms**

Research into whether peer influence can decrease alcohol use in college students has usually taken one of two approaches. The first approach focuses on social norms. As mentioned previously, social norms are a tool that is used frequently by alcohol-reduction programs conducted by universities and colleges (U.S. Department of Education, 2008). With most of these programs, the aim is to create social norm marketing campaigns to provide students with accurate alcohol use information. According to Berkowitz (2004), and Bosari and Carey (2001, 2003), the social norms approach is based on three assumptions. The first assumption is that most students overestimate their peers' alcohol consumption and their peers' approval of alcohol consumption. The second assumption is that these inflated perceptions of social norms regarding alcohol can influence students' drinking behavior as they try to live up to these social norms. The last assumption is that correcting these inflated perceptions of social norms by replacing them with actual normative information about student drinking will lead to decreases in students' drinking. Many studies and student surveys have supported the first assumption: college students do tend to overestimate their peers' alcohol consumption and the extent to which their peers approve of that consumption (Bosari & Carey, 2003; Perkins, Haines, & Rice, 2005;

Perkins, Mielman, Leichliter, Cashin, & Presley, 1999; Southern Illinois University Carbondale, 2014). The second and third assumptions, however, have had less consistent research support. Some studies have found a positive relationship between college students' perceived drinking norms and alcohol consumption, while other studies have not found this relationship (Berkowitz, 2004, 2005; Borsari & Carey, 2003; Campo et al., 2003; Rimal & Real, 2003; Yanovitzky et al., 2006). Additionally, research has found that only some social norms campaigns on college campuses have successfully decreased alcohol consumption (Berkowitz, 2004; Haines & Baker, 2003; Wechsler et al., 2003). Despite these inconsistent results, social norm interventions are widely used on college campuses (U.S. Department of Education, 2008).

**Socially Situated Experiential Learning**

The second approach that has often been taken in research studies that investigate whether peer influence can decrease alcohol use involves socially situated experiential learning (SSEL). Lederman and Stewart (2005) describe SSEL as the experience-based process students use to acquire and interpret social information that they receive through a variety of sources. Peers, parents, school officials, organizations, faculty, and the media all provide information about alcohol use to students (Lederman & Stewart, 2005). These sources of information often create and/or reinforce the idea that college students consume alcohol in excess. This creates a college drinking culture on campuses throughout the United States (Lederman & Stewart, 2005). According to this theory, it is possible to change the culture of college drinking by changing the way students and those they interact with discuss drinking and social norms surrounding alcohol use. This theory of college drinking culture however, may underscore the importance alcohol plays in the social lives and interactions of college students. For example, Monahan and Linnutti (2000) explain that alcohol is often viewed and used as a social lubricant among college students.

Students tend to use alcohol as a means of meeting new people and creating experiences that they can talk about afterwards. While some colleges and universities have used campaigns aimed at changing the narratives and culture surrounding alcohol on campus, it remains to be seen exactly how successful these programs are (U.S. Department of Education, 2008).

The research presented here took a different direction in regard to peer influence in reducing the intent to drink alcohol among college students. The current study aimed to utilize similarity and liking as a means to reduce college students' intention to drink alcohol. This was done through the use of social tuning, a social psychological concept that has not been used in drinking interventions before.

## Social Tuning

### Definition

Research shows that people seek and sustain bonds with others who have similar attitudes and beliefs (Hardin & Conley, 2001; Lowery, Hardin, & Sinclair, 2001). Shared reality theory states that people create and maintain a mutual understanding of each other's attitudes and beliefs (Echterhoff, 2010; Hardin & Higgins, 1996). In a review of shared reality theory, Echterhoff, Higgins, and Levine (2009) explained that people have an innate need to share their reality with others, and to come to agreement about things that matter to them. This shared reality that people create tends to foster and advance interpersonal relationships (Echterhoff et al., 2009; Hardin & Higgins, 1996).

Interpersonal relationships that people create with others are maintained through constant adjustment of attitudes, beliefs, and sometimes behavior to better correspond with the other person. This interpersonal adjustment is called affiliative social tuning (Sinclair & Huntsinger, 2006; Sinclair, Huntsinger, Skorinko, & Hardin, 2005b). Shared reality theory posits that

individuals are likely to tune more towards those with whom they desire to form relationships (i.e. those toward whom they have affiliative motivation) rather than individuals with whom they do not desire to form relationships (Sinclair et al., 2005b; Sinclair, Hardin, Lowery & Colangelo, 2005a). Research has shown that social tuning can have powerful effects on individuals and can lead to real changes in attitudes, beliefs, and behaviors, that at times can even seem counter to the established attitudes, beliefs, and behaviors of the person (Sinclair et al., 2005b). However, the longevity of these changes has not been solidified in research and remains open for investigation. However, Sinclair et al. (2005a) and Sinclair et al. (2005b) posited that the shared reality theory suggests that any observed changes may only last for as long the target for socially tuning remains in the tuner's environment. Therefore, they suggest that environmental changes could impact any changes within the individual.

**Affiliative Motivation**

Sinclair et al. (2005a) investigated the effect of affiliative motivation on social tuning. In Study 1, the researchers examined whether automatic attitudes were subject to affiliative social tuning. Participants completed an automatic racial prejudice questionnaire while interacting with an experimenter who wore a shirt that expressed anti-racism beliefs (e.g. said "Eracism") or a plain blank shirt of the same color (Sinclair et al., 2005a). Participants then completed a demographics questionnaire and a measure of liking for the experimenter. Results showed that women exhibited less automatic racial prejudice in the presence of an experimenter wearing an anti-racism shirt versus an experimenter wearing a plain blank shirt. The experimenter's shirt, however, did not affect men's automatic racial prejudice. The researchers also found that women socially tuned their attitudes towards the experimenter more when they liked them, suggesting the importance of affiliative motivation in social tuning (Sinclair et al., 2005a).

Study 2 was similar to Study 1, but the likability of the experimenter was also manipulated in addition to the experimenter's ostensible beliefs. Participants interacted with an experimenter who was polite or rude to them (affiliative motivation manipulation) and wore an anti-racism shirt (e.g. "Eracism shirt") or a blank plain shirt of the same color (Sinclair et al., 2005a). Manipulation checks revealed that the affiliative motivation manipulation led to the expected changes in the likability of the experimenter. Participants who interacted with a polite experimenter experienced increased affiliative motivation (i.e. they liked the experimenter more), while participants who interacted with the rude experimenter experienced decreased affiliative motivation (i.e. they liked the experimenter less). After interacting with the experimenter, participants completed a computerized measure of automatic racial prejudice. Supporting the hypothesis that affiliative motivation leads to social tuning, participants who interacted with a polite experimenter were more likely to socially tune to the experimenter's ostensible racial attitudes than those who interacted with a rude experimenter (Sinclair et al., 2005a). Unlike Study 1, this result was found regardless of the gender of the participant. These studies show that liking someone can lead to changes in people's attitudes and beliefs, as they shift their attitudes to be more similar to those of the person they like.

Sinclair et al. (2005b) provided additional direct support for social tuning by investigating how social interactions with individuals who hold stereotyped views affect the self-evaluations of targets of stereotypes. These studies manipulated both affiliative motivation and the interaction partner's perceived intergroup attitudes. In a series of four studies, participants either thought they were going to interact or actually interacted with an experimenter who held either stereotype-consistent or stereotype-inconsistent views about a social group to which the participant belonged (Sinclair et al., 2005b). The researchers predicted that high affiliative

motivation would lead participants to change their self-views and behaviors to be more consistent with their partner's views of their group (Sinclair et al., 2005b). In Studies 1 and 2, women participants thought they were going to interact, or actually interacted, with someone who had traditional or nontraditional views of women (Sinclair et al., 2005b). Consistent with the affiliative social tuning hypothesis, when they had high affiliative motivation, their self-descriptions and behavior corresponded to the supposed views of their social interaction partner. In Study 3, African American participants thought they were going to interact with an individual who did or did not hold stereotypic views of African Americans (Sinclair et al., 2005b). When affiliative motivation was high, the African American participants used self-descriptions that were consistent with their partner's views about African Americans. This was true even for more negative stereotypes about African Americans. Finally, Study 4 showed that low affiliative motivation led participants to desire social distance from their interaction partner. This desire for social distance led them to display antituning, or to shift their attitudes away from the views of their interaction partner. These four studies are important because the researchers found that behavioral measures are also subject to social tuning, not just self-views and self-reported attitudes (Sinclair et al., 2005b). They also highlight the phenomenon of antituning as a means of creating social distance from disliked others.

The research presented here aimed to utilize social tuning to change attitudes about alcohol consumption and behavioral intentions for consuming alcohol in the future. Affiliative motivation was designed to heighten in participants through an I-sharing manipulation.

## I-sharing

### What is I-sharing?

I-sharing happens when one shares an immediate, in-the-moment, subjective experience with another individual (Pinel, Long, Landau, & Pyszczynski, 2004; Pinel, Long, Landau, Alexander, & Pyszcynski, 2006). The term I-sharing stems from a distinction William James (1890) made between two parts of the self, the Me and the I. The Me is the objective part of the self. This includes all aspects of the self that the individual can reflect upon, including: personality, memories, political preferences, family composition, place of origin, biographical information, morals, values, etc. The objective self is relatively stable throughout one's life, but can change when new information is added (Pinel et al., 2006). The I, on the other hand, is the subjective part of the self (James, 1890). The I is not stable and enduring, but changes constantly as it actively responds to the environment. The I was called a "stream of consciousness" by James (1890) to describe how it changes depending on what is occurring for the individual moment by moment. The I encompasses how an individual reacts, understands, perceives, and thinks about their world, right now, in the moment (Pinel et al., 2006). It is this active, experiencing part of the self that is implicated in I-sharing.

As mentioned above, I-sharing refers to the sharing of an immediate, in-the-moment, subjective experience with another individual. People can use a variety of cues to infer that they are I-sharing, but Pinel et al. (2006) argue that the clearest evidence for I-sharing occurs when people react the same way at the same time to the same stimulus. It is important to note that I-sharing always represents an inference, though. Because of their inescapable existential isolation (Yalom, 1980), people can never really know whether they have shared the same experience as

another person, because they cannot experience another person's mental states, perceptions, and thoughts, and feelings firsthand.

In fact, Pinel et al. (2006) suggest that existential isolation may be one reason that people like I-sharing so much. When people I-share, their feelings of existential isolation decrease, as they believe that they do know another person's experience, because they believe that experience is identical to their own. In reducing existential isolation, I-sharing also helps people meet two important needs: the need for belonging (Baumeister & Leary, 1995) and the need for belief validation (Landau et al., 2006; Swann & Bosson, 2010).

**I-sharing and Liking**

I-sharing has been shown to increase liking for the person with whom one I-shares (Pinel & Long, 2012; Pinel et al., 2006). Pinel et al. (2006) investigated the role that I-sharing plays in liking. Across several studies, individuals showed greater liking for objectively dissimilar individuals with whom they I-shared than for objectively similar others with whom they did not I-share. In other words, I-sharing promotes liking to a greater degree than Me-sharing (similarity with regard to objective features of the self) does.

I-sharing increases liking not only for objectively dissimilar individuals, but also for outgroup members (Pinel & Long, 2012; Pinel, Long, & Crimin, 2008). In particular, Pinel and Long (2012) conducted a series of studies that reveals the role I-sharing can play in increasing liking for individuals from an outgroup. In this series of studies, participants interacted over the computer with two partners: one ingroup member and one outgroup member. The intergroup dimension was gender in Study 1, sexual orientation in Study 2, and race in Study 3. In all three studies, I-sharing was manipulated using a computerized version of the Imaginiff game. Each trial of the Imaginiff game asks participants to imagine a celebrity (e.g. Oprah Winfrey) as a

member of some other category (e.g. a plant). Participants then choose which of four depictions of that category the celebrity would be (e.g. red rose, climbing vine, green grass, oak tree). Immediately after participants select their response, they see their partners' responses. This game is unique in that the questions are novel for participants and involve making judgments that they have not made in the past. Participants, therefore, cannot draw upon their existing objective knowledge (i.e., their Me) to answer the questions. Participants must rely on their subjective, in-the-moment thoughts and experiences (i.e. their I) to answer the questions (Pinel & Long, 2012; Pinel et al., 2015). When a partner answers the questions the same way as they do, participants feel as though they are sharing an identical subjective experience (i.e. I-sharing).

In Study 1, female participants were randomly assigned to I-share with the same-sex (female) partner or other-sex (male) partner (Pinel & Long, 2012). Results revealed that female participants who I-shared with the female partner liked the female partner more than the male partner. However, female participants who I-shared with the male partner liked the male partner more than the female partner. Moreover, participants preferred to work with the I-sharing partner on a new task, regardless of whether the I-sharing partner was male or female (Pinel & Long, 2012). Importantly, the researchers found that I-sharing led to liking irrespective of the importance participants placed on their gender social identity. Participants who viewed their gender identity as important to them still showed greater liking for the partner they I-shared with, even if that partner did not share their gender (Pinel & Long, 2012).

In Study 2, heterosexual participants believed that they were playing the Imaginiff game with two partners who both shared their gender. One of the supposed partners was heterosexual (and thus an ingroup member for these heterosexual participants) and the other was homosexual (and thus an outgroup member for these heterosexual participants). Participants were randomly

assigned to I-share with either the ingroup member or the outgroup member. Participants were also randomly assigned to learn their partners' sexual orientation before playing the Imaginiff game (low salience group) or after playing the Imaginiff game and right before completing the dependent measures (high salience group). As with Study 1, the results showed that participants liked the I-sharing partner more than the non-I-sharing partner, and preferred to work with the I-sharing partner on a new task, even when that partner did not share their sexual orientation. The researchers found that the salience of the partner's sexual orientation did not moderate this effect (Pinel & Long, 2012), indicating that participants liked an I-sharing outgroup member just as much when their sexual orientation was very salient as when it was not very salient.

In Study 3, the researchers examined the role existential isolation plays in liking for the I-sharer, and they compared I-sharing with a powerful form of Me-sharing: value-sharing (Pinel & Long, 2012). White participants who were either high or low in existential isolation played the Imaginiff game with an imaginary White partner and an imaginary Black partner. As in Studies 1 and 2, they were randomly assigned to I-share with one of these partners and not the other. Next they exchanged responses with their partners to a series of questions about their values. They learned that they shared many values with one of their partners but not the other. Importantly, with whomever participants I-shared, they did not share values. Thus, some participants I-shared with the White partner and value-shared with the Black partner, and other participants value-shared with the White partner and I-shared with the Black partner. Results indicated that participants who were high in existential isolation preferred the I-sharing partner, regardless of whether the I-sharing partner was White or Black. Participants low in existential isolation preferred the value-sharing partner, again regardless of whether the value-sharing

partner was White or Black. This study showed that existential isolation can be an important moderator of the effect of I-sharing on liking.

**I-sharing and Conformity**

In a study by Pinel, Long, & Crimin (2010), I-sharing was tested as a means to impact conformity as measured via the line judgment task originally developed by Asch (1951). Participants were randomly assigned to either the I-share/no Me-share condition or the Me-share/no I-share condition. After undergoing the I-sharing and Me-sharing manipulations, participants took part in a replication of Asch's (1951) line judgment task. As in the classic line judgment conformity paradigm, each participant sat in a chair next to confederates, and over 18 trials they indicated which of three comparison lines was the same length as a target line (Pinel et al., 2010). In the public portion of the experiment, the confederates and the participant were asked to state aloud which comparison line was the same length as the target line. As with Asch (1951), the confederates responded first, followed by the participant. Confederates responded correctly to the task for some trials and responded incorrectly for 12 of the 18 trials (Pinel et al., 2010). Conformity was measured by the response of the participant for each of the 12 trials in which the confederates gave an incorrect response. For the private portion of the experiment, all trials were run a second time, but this time the participants wrote their responses on a piece of paper (Pinel et al., 2010).

Replicating Asch's (1951) research, participants conformed more in public than in private (Pinel et al., 2010). Importantly, though, results indicated that participants who I-shared before the conformity task made fewer attempts to conform to wrong answers provided by the confederates than participants who did not I-share before the conformity task. Pinel et al. (2010) concluded that not I-sharing with someone may enhance existential isolation and thus increase

efforts to find agreement with others by displaying conformity with others. On the other hand, I-sharing may promote feelings of existential connectedness, thus satisfying our need for belonging, and reducing our motivation to conform. Supporting this explanation, participants with high dispositional levels of existential isolation tended to conform more than those with low dispositional levels of existential isolation regardless of whether or not they I-shared (Pinel et al., 2010).

## Current Study

As has been described, drinking among college students is a serious public health problem. Nationally, consistent evidence shows that high percentages of college students drink alcohol, and also engage in binge-drinking behavior (SAMHSA, 2014; Southern Illinois University Carbondale, 2014). This alcohol consumption has been shown for decades to increase drinking-related problems and difficulties among this population. At IUP, recent surveys have also shown high rates of alcohol consumption and negative outcomes associated with alcohol use. These problems can be benign like experiencing a hangover, but can also be severe, including serious injury or death (Schiefelbein, 2016). While many college campuses and universities have put forth programs and strategies to reduce the drinking rates on campus, these programs have had mixed results. Additionally, these programs typically require substantial monetary and campus resources (U.S. Department of Education, 2008). Therefore, it is important that new strategies and interventions be explored as a means to reduce alcohol use among college students.

Research into successful college alcohol-prevention programs has found that education about the drinking norms on campus, as well as altering policies and creating coalitions among the community, are the most widely used (U.S. Department of Education, 2008). However,

research has also shown that peer influence can be used to both increase drinking rates among college students and to decrease drinking rates (Berkowitz, 2004; Borsari & Carey, 2001; Lewis & Neighbors, 2004; Lederman & Stewart, 2005). This peer influence appears to be more impactful when the influence comes from proximal reference groups to which an individual belongs and feels similar, as people are more likely to change their drinking habits to better meet the expectations held by members of groups that meet these criteria (Bosari & Carey, 2003; Lewis & Neighbors, 2004; Lewis & Neighbors, 2006).

The current study aimed to utilize peer influence to reduce alcohol use in a novel way. Research has found that people tend to seek and maintain bonds with other people who are similar to them. In order to maintain these bonds, people will socially tune their attitudes, beliefs, and behavior to those held by the other person (Echterhoff, 2010; Hardin & Higgins 1996; Sinclair et al., 2005a; Sinclair et al., 2005b). The current study aimed to test whether participants would socially tune their drinking intentions to those of a partner who states that he/she does not drink alcohol.

Affiliative motivation must exist for social tuning to occur (Hardin & Higgins, 1996; Sinclair et al., 2005a; Sinclair et al., 2005 b). The study presented here attempted to manipulate affiliative motivation via an I-sharing manipulation. Research has found that I-sharing increases liking, or affiliative motivation (Pinel et al., 2004; Pinel et al., 2006; Pinel & Long, 2012). Therefore, it was expected that the I-sharing manipulation would provide participants with the motivation to tune their attitudes, beliefs, and behaviors towards the person with whom they I-shared. After the I-sharing manipulation, participants learned that their partner chooses to not drink alcohol and some reasons why their partner chooses not to drink. It was expected that participants who I-shared with their partner would display social tuning by reducing their

intention to drink alcohol in the future and by changing their attitudes concerning alcohol to align more closely with those of their partner.

# CHAPTER III

# METHOD

## Participants and Design

Participants were students enrolled in a General Psychology course at Indiana University of Pennsylvania who were recruited through the Psychology Research Participation Pool. For taking part in the study, participants received research credit in their course.

Two hundred students signed up for the main portion of the study, and 199 completed all of the key measures including the alcohol intention questions, the I-sharing task, measures of liking, similarity, attitudes, and the testimonial portion. In addition to the 199 who completed all of the key measures, the database that was downloaded from Qualtrics included an additional 61 participants who began the survey but failed to complete one or more of these key measures. Because only 200 students signed up in total, it seems that 61 participants accessed the study twice, or that a smaller number of participants accessed the study more than twice. This could have occurred if some people started the study, realized they did not have time to complete it, signed off, and then returned to the study later when they had more time to complete it. Partial data were removed from the database before statistical analyses were performed. Because attending to the partner's testimonial, which revealed that the partner chose not to drink alcohol, was of paramount importance for examining whether interacting with a partner who chooses to abstain influences participants' own drinking intentions, six participants who failed to remember this information were removed from the database.

The final sample for the main portion of the study included 193 participants. Of these, 150 identified as female (77.7%), 42 identified as male (21.8%), and one identified as non-binary/other/decline to answer (0.5%). Participants identified their racial identity as White

(82.9%), Black or African American (6.7%), Asian (2.6%), Native Hawaiian or Pacific Islander (1.0%), Hispanic or Latino (1.6%), and Other/Decline to answer (5.2%). Age ranged from 18 to 27, with most participants identifying their age as 18 (N = 76; 39.4%) or 19 (N = 94; 48.7%). Four participants declined to indicate their age (2.1%).

The main portion of the study utilized a one-way between-participants design with three experimental conditions. Participants were randomly assigned to the I-sharing, no I-sharing, and no information experimental conditions. There were 63 (32.6%) participants assigned to the I-sharing condition, 64 (33.2%) assigned to the no I-sharing condition, and 66 (34.2%) assigned to the no information condition.

Twenty participants accessed the follow-up portion of the study for additional research credit. One participant was removed for not answering any of the questions and two were removed for not inputting the required code necessary to connect the follow-up data to their data from the main portion of the study. A total of 17 participants were included in the data analysis for the follow-up. Two (11.8%) identified their gender as male and 15 (88.2%) as female. Participants identified their racial identity as White (88.2%), Black or African American (5.9%), and Other/Decline to answer (5.9%). Age ranged from 18 to 26, and the majority were 18 (N = 4; 23.5%) or 19 (N = 10; 58.8%). Of the participants who took part in the follow-up portion of the study, five (29.4%) had been assigned to the I-sharing condition during the main portion of the study, five (29.4%) to the no I-sharing condition, and seven (41.2%) to the no information condition.

## Procedure and Materials

### The Main Portion of the Study

The study was conducted online using Qualtrics. Participants completed the study using any computer with internet access that was convenient for them. Participants were given a description of the study prior to their sign-up using the SONA website (see Appendix A).

**Informed consent.** When participants accessed the Qualtrics study, they were first presented with the informed consent form. The informed consent form explained that participants would answer questions about their social behavior and alcohol use, and that they would engage in several computer tasks. Participants clicked a button on their screen to indicate their consent to continue (see Appendix B).

**Introduction.** After providing their consent, participants were directed to an introduction page on the computer. Although the real purpose of the study was to examine whether I-sharing produces an increase in the extent to which participants socially tune their attitudes to make them more consistent with a partner who states that he/she does not drink alcohol, knowing the real purpose of the study could influence participants' responses and lead to invalid conclusions. The introduction page described the procedure that participants would undergo during the session, along with a cover story that offered an explanation for how the various procedural elements fit together in a way that did not reveal the true purpose of the research. The cover story described that the researchers were interested in the similarity of social behaviors and alcohol use among two members of the same cohort (see Appendix C). The true purpose of the research was revealed during the debriefing at the end of the session.

**Timeline Followback (TLFB).** After reading the introduction, participants answered questions about their alcohol consumption. The TLFB is a calendar-aided recall measurement designed to assess alcohol consumption over the last 30 days. The logic of the TLFB involves using anchoring events (e.g., holidays, important activities) to improve retrospective recall about the participant's alcohol consumption. The TLFB makes participants acutely aware of their alcohol consumption in the prior 30 days, and this tool was utilized to assist participants in their estimation of how many alcoholic drinks they intended to consume in the next 30 days (the next experimental task).

Participants saw on their computer screen a picture of the TLFB calendar (see Appendix D for an example) from January 2018 to April 2018. Participants were asked to identify the 30 days immediately prior to the date on which they were participating in the study. The experimenter had already labeled school holidays, national holidays, and religious holidays on the calendar as anchoring events. Participants were prompted to think about other anchoring events, which include personal holidays, parties, other events that involved drinking, and other memorable events. The instructions indicated that one standard drink equals 12 ounces of beer, 5 ounces of wine, or 1.5 ounces of liquor, to help standardize participants' conceptions of what constitutes "a drink." Participants were asked to indicate on how many occasions they consumed alcohol in the past 30 days, how many alcoholic drinks they consumed on each of those occasions, and the total number of drinks they consumed in the past 30 days.

To disguise our interest in alcohol consumption, participants were also asked to indicate on how many occasions they engaged in a social gathering with more than three people in the past 30 days, how many movies they watched with others in the past 30 days, and on how many

occasions they dined at a restaurant with others in the past 30 days. The questions about these distractor behaviors were included to help mask the true aim of the measure.

Sobell, Brown, Leo, and Sobell (1996) found that the TLFB can be reliably administered through a computer format and that alcohol use estimates collected via computer did not differ from typical face-to-face, paper-and-pencil administrations. The TLFB has been used in a variety of populations, including: college students, problem drinkers, and drinkers in the general population of varying genders, ages, and ethnicities (Sobell, Agrawal, Sobell, Leo, Young, Cunningham, & Simco, 2003; Sobell, Sobell, Leo, & Cancilla, 1988; Sobell, Sobell, Klajner, Pavan, & Basian, 1986). Sobell and Sobell (1992) found that the TLFB had high test-retest reliability across various populations. Sobell et al. (1986) found test-retest reliabilities of 0.77 to 0.97 for the TLFB among college students over 30 to 90-day recall periods, respectively.

**Intention to drink alcohol (pre-intervention).** Following the completion of the TLFB, participants answered the following question: *Using your best estimate, how many alcoholic drinks do you plan on drinking in the next 30 days? Note: one standard drink is 12 ounces of beer, 5 ounces of wine, and 1.5 ounces of liquor.* This was one of the dependent variables of interest and was asked again before the end of the study.

**Distractor intentions (pre-intervention).** As we did with the TLFB, we attempted to disguise our interest in alcohol by asking participants to estimate on how many occasions they planned to engage in a social gathering with more than three people, how many movies they planned to view with others, and on how many occasions they planned to dine at restaurants with others in the next 30 days.

**Ruler of change.** Next, participants completed a ruler of change to assess the degree to which they feel they need to change their alcohol use. On a ruler of 0 (I never think about my

drinking) to 10 (My drinking has changed; I now drink less than before), participants indicated how they feel about their drinking behavior (see Appendix D). Numbers closer to ten indicated that the participant was currently maintaining a change in their alcohol use. This measure was included to assess whether participants' prior readiness to change their alcohol consumption influenced their susceptibility to socially tuning their attitudes toward a partner who does not drink alcohol. To disguise our interest in alcohol, participants used a similar ruler to indicate the degree to which they felt they needed to become more socially involved, and the degree to which they felt they needed to make new friends (see Appendix E).

LaBrie, Pedersen, Thompson, and Earleywine (2008) found the ruler of change to be a reliable measure in assessing the motivation to change drinking habits. The ruler of change for alcohol has also been found to have similar reliabilities to lengthier questionnaires that assess the motivation to change alcohol use ($r$ = .77; LaBrie, Quinlan, Schiffman, & Earleywine, 2005). Additionally, the ruler of change for alcohol outperformed various change questionnaires in predicting behavioral intentions, suggesting that the ruler had at least comparable concurrent criterion validity (LaBrie et al., 2005).

**Partner match.** After participants completed the alcohol and distractor questions, they were told that, in the next part of the study, they would be matched up with a partner who was also an introductory psychology student for a series of computer tasks. The computer program asked them to wait while it searched for another participant who was currently participating in the study. Participants waited approximately 15 seconds before the computer program told them it had found them a partner. In fact, there was not an actual partner. Instead, the "partner's" responses were computer-generated and followed a pre-determined pattern designed by the experimenter.

**Demographics exchange.** Participants were told that the first partner task would involve exchanging demographic information so that they and their partner could begin to get to know each other. Participants indicated their gender, age, race/ethnicity, year in school, major, and residential background (see Appendix F). Then they learned that their partner shared their gender and residential background, was 19, white, a freshman, and a psychology major. Having the partner share participants' gender and residential background ensured that all participants had at least two aspects of similarity with their partner. It was thought that believing that their partner was similar to them would increase participants' affiliative motivation towards their partner. Research has found that affiliative motivation can increase the degree to which individuals alter their attitudes, beliefs, and behaviors to those of another person (Sinclair et al., 2005a; Sinclair et al., 2005b). The other characteristics were chosen to be representative of typical members of the research participation pool, to enhance the partner's believability. In order to insure anonymity, only the gender, age, and race/ethnicity of the participant were saved for the purposes of describing the sample. Year in school, major, and residential background were programmed to not be saved in the Qualtrics dataset. This was done to ensure that participants could not be identified through their demographic information.

**I-sharing task.** After the demographics exchange, participants began the task through which I-sharing would be manipulated. Participants were randomly assigned to one of three between-participants experimental conditions: an *I-sharing condition*, a *no I-sharing condition*, and a *no information about I-sharing condition*. I-sharing was manipulated using the Imaginiff game, which has been used successfully in previous research to manipulate I-sharing (Pinel & Long, 2012; Pinel et al., 2008). The Imaginiff game invites participants to imagine that a certain celebrity (e.g., Ellen DeGeneres) is a member of a different category (e.g., toy) and then indicate

which of four items in that category the celebrity would be (e.g., Transformers, teddy bear, play dough, chemistry set). The Imaginiff game is unique in that participants never have thought about these comparison questions before and are not able to draw upon their existing knowledge base to answer the questions. Instead, participants must use their in-the-moment subjective thoughts and experiences to answer the questions. Hence, responding the same way conveys similarity of subjective thoughts and experiences, or I-sharing. Responding differently conveys dissimilarity of subjective thoughts and experiences, or no I-sharing.

Participants underwent 10 trials of the Imaginiff game. Each trial involved a different celebrity, a different category, and different multiple-choice options (see Appendix G for complete list). After participants provided their own response to each trial, those in the I-sharing and no I-sharing conditions immediately saw their partner's response. Participants in the I-sharing condition learned that their partner chose the same response as they did on 7 out of 10 trials. Participants in the no I-sharing condition learned that their partner never chose the same response as they did. Participants in the no information about I-sharing condition did not see their partner's responses on any of the Imaginiff trials.

**Liking measure.** After the I-sharing manipulation, participants used a 1 (not at all) to 7 (very much) response scale to rate their liking for their partner on five items drawn from Pinel and Long (2012). Participants were told that their partner would not see their responses to these measures, to ensure that participants felt free to answer the questions honestly. Specifically, participants reported the extent to which they felt close to their partner, could imagine becoming friends with their partner, would feel comfortable meeting their partner, would look forward to meeting their partner, and liked their partner (see Appendix H). These five items were averaged

together to create a composite of liking for the partner. The five-item measure was found to have strong internal consistency in the current study with a Cronbach's alpha of .85.

**Similarity measure.** Participants also completed a measure of the extent to which they felt subjectively and objectively similar to their partner. Using a 1 (not at all) to 7 (very much) response scale, participants indicated their perceived similarity to their interaction partner. Three items assessed how subjectively similar participants felt to their interaction partner (*e.g. To what extent do you think that you and your partner would "get" each other?*), and three items assessed how objectively similar participants felt to their interaction partner (*e.g. To what extent do you think that you and your partner come from similar backgrounds?*). For a complete list of these questions, see Appendix I. The objective similarity items were found to have strong internal consistency in the current study with a Cronbach's alpha of .86. Similarly, the items measuring subjective similarity were also found to have strong internal consistency in the current study with a Cronbach's alpha of .92.

**Alcohol testimonial**. After completing the liking and similarity measures, participants were told that they and their partner would be assigned to write an essay responding to a prompt on either alcohol, movies, restaurants, or studying. In reality, all participants were asked to write a testimonial about their alcohol use by responding to this prompt: *Please write a short paragraph for your partner about your alcohol use by answering the following questions: Do you drink alcohol? Why do you choose to drink or not to drink? What are your top three reasons for drinking or not drinking alcohol? Is drinking alcohol important to you? Why or why not?* Participants were told that, after they and their partner finished writing their paragraph, they would read each other's responses. Approximately 15 seconds after participants submitted their essay, they viewed a testimonial that appeared to have been written by their partner but was

actually generated ahead of time by the experimenter (see Appendix J). Participants were asked to read this testimonial carefully. All participants viewed the same testimonial, which indicated that the online partner did not drink alcohol, the reasons why the partner did not drink alcohol, and why drinking alcohol was not important to them. The specific reasons for not drinking alcohol were chosen because they do not make a moral judgment about alcohol use or individuals who choose to drink alcohol. Additionally, care was taken to avoid suggesting that the partner would like to drink alcohol but can't, such as for a health reason.

**Attitudes toward alcohol.** After the participants viewed their interaction partner's testimonial, they were asked to rate their agreement with six experimenter-generated items concerning their attitudes toward alcohol (see Appendix K). They responded to these items on a scale ranging from 1 (strongly disagree) to 7 (strongly agree). After reverse-scoring the appropriate items, responses were averaged to produce an alcohol attitudes composite score. These six items were found to have strong internal consistency in the current study with a Cronbach's alpha of .87.

**Attitudes toward those who do not drink alcohol.** Using the same 1 (strongly disagree) to 7 (strongly agree) scale, participants also rated their agreement with six experimenter-generated items concerning their attitudes toward individuals who do not drink alcohol (see Appendix K). After reverse-scoring the appropriate items, responses to these items were averaged to produce an attitudes towards those who do not drink alcohol composite score. These six items were found to have acceptable internal consistency in the current study with a Cronbach's alpha of .72.

**Attitudes toward distractor topics.** Using the same 1 (strongly disagree) to 7 (strongly agree) scale, participants also rated their agreement with 18 experimenter-generated items

concerning their attitudes towards social gatherings with more than three people, watching movies with others, and going to restaurants with others (see Appendix K). These items were used to distract participants from the alcohol questions and were not included for analysis.

**Intention to drink alcohol (post-intervention).** Participants were asked: *Using your best estimate, how many alcoholic drinks do you plan on drinking in the next 30 days? Note: one standard drink is 12 ounces of beer, 5 ounces of wine, and 1.5 ounces of liquor.* Participants' response to this question was compared to their response to the same question earlier in the study. A decrease in the number of alcoholic drinks participants intend to consume would indicate that participants may be socially tuning their behavioral intentions to better correspond to those of their interaction partner.

**Distractor intentions (post-intervention).** To distract participants from the true variable of interest in the study, participants also estimated on how many occasions they planned on engaging in a social gathering with more than three people in the next 30 days, how many movies they planned on viewing with others in the next 30 days, and how many occasions they planned on going out to eat at restaurants with others in the next 30 days. These items were used to distract participants from the alcohol questions and were not included for analysis.

**Manipulation checks.** To ensure that participants attended to the most critical information presented during the study, they were asked to respond to manipulation checks regarding their partner's reported alcohol use and their I-sharing condition (see Appendix L).

**Code collection.** To ensure that data collected from the main portion of the study could be connected to data from the optional follow-up portion of the study, participants were asked to generate a code. This code was unique for each participant and consisted of the last three digits of their phone number followed by the first letter of their birth month (see Appendix M).

**Abbreviated debriefing/Follow-up recruitment.** Once participants had completed all the study measures, they were provided with an abbreviated debriefing form, which thanked them for their participation but did not reveal the purpose of the study. This abbreviated form was used because it was hoped that participants would complete the optional follow-up portion of the study and full knowledge about the purpose of the study likely would have impacted how participants responded to these additional questions. All participants were told that they were eligible for an optional follow-up study for additional research credit, that the follow-up study would occur two weeks after their participation in the main portion of the study, and that it would involve a web-based survey (see Appendix N).

After reading the abbreviated debriefing and invitation to take part in the follow-up portion of the study, participants followed a link to a separate Qualtrics survey to input their names for research credit. Having a separate survey for names ensured that participants' identifiable data would be separate from their survey responses, to ensure anonymity of responses.

Participants were invited to visit another separate Qualtrics survey to input their contact information for the follow-up portion of the study. This survey asked interested participants to input their names and IUP email addresses and to indicate whether they would like to receive an email in two weeks with a link to the follow-up portion of the study for additional research credit.

All three of these Qualtrics surveys were separate from one another, which means there was no way to connect the participants' identifiable data with their survey responses. This ensured anonymity of the responses of the participants.

**The Follow-Up Portion of the Study**

A total of 60 participants indicated that they would like to be contacted with the optional follow-up survey and were emailed by the experimenter two weeks after their participation in the main portion of the study. The email contained a link to a Qualtrics survey. As noted above, 20 participants accessed the follow-up survey, 17 of whom provided usable data.

**Follow-up consent.** When participants accessed the survey, they were presented with an informed consent letter (see Appendix O). The informed consent letter explained that participants would answer questions about their social behavior and alcohol use similar to the questions they answered previously. Participants clicked a button on their screen to indicate their consent to continue.

**Follow-up behavior questions.** Participants were asked questions regarding their behavior in the last two weeks, including how many alcoholic drinks they consumed, on how many occasions they engaged in a social gathering with more than three people, how many movies they viewed with others, and on how many occasions they dined at restaurants with others. As before, our interest was in alcohol use; the other questions were distractors (see Appendix P).

**Follow-up attitudes.** Participants completed the same measures of their attitudes towards alcohol, those who do not drink alcohol, social gatherings with more than three people, watching movies with others, and going to restaurants with others that they completed in the main portion of the study (see Appendix Q).

**Follow-up code generation.** Participants were then asked for the code they created in the main portion of the study (see Appendix R). This code was used to connect the data from the main portion of the study with the data from the follow-up portion of the study, without asking

for any personally identifiable information. After the data were connected in the experimenter's database, the code was deleted so that there are absolutely no remaining connections between participants and their data.

**Full debriefing/Participation credit.** Once participants completed the follow-up portion of the study, they were thanked for their participation and fully debriefed (see Appendix S). The debriefing informed participants about the true nature of the experiment and explained why it was necessary to use a computer-generated partner in the main portion of the study. Participants were given information about resources on campus regarding alcohol use and related consequences including the office of Alcohol Tobacco and Other Drugs on the IUP campus. Participants were provided a link to a separate Qualtrics survey to input their name for research credit.

After data collection was complete, the experimenter emailed the full debriefing form to the participants who took part in the main portion of the study but did not take part in the follow-up portion, to ensure that everyone received a complete explanation of the research.

# CHAPTER IV

# RESULTS

## Hypothesis 1

Hypothesis 1 examined participants' intention to drink alcohol. It was hypothesized that I-sharing with a partner who does not drink alcohol would produce a reduction in the number of alcoholic drinks participants intend to consume over the next 30 days. No change was expected for participants in the no I-sharing and no information conditions.

### Examining the Hypothesis

Hypothesis 1 was examined by submitting participants' pre-intervention measure of intention to drink alcohol and post-intervention measure of intention to drink alcohol to a 3 (I-sharing Condition: I-sharing, no I-sharing, no information) X 2 (Timing: pre-intervention, post-intervention) mixed ANOVA with repeated measures on the second factor. No main effect for I-sharing condition was observed $F$ (1, 163) = .70 $p$ = .499. A main effect for Timing was observed, $F$ (1, 163) = 5.57, $p$ = .019. This indicates that the number of alcoholic drinks that participants intended to consume was reduced from pre-intervention ($M$ = 7.89, $SD$ = 12.05) to post-intervention ($M$ = 7.15, $SD$ = 11.52) across experimental conditions. Unexpectedly, though, no interaction was observed between I-sharing Condition and Timing, $F$ (1, 163) = .36, $p$ = .699.

## Hypothesis 2

Hypothesis 2 examined participants' attitudes towards alcohol. It was hypothesized that participants in the I-sharing condition would report less positive attitudes toward alcohol than participants in the no I-sharing and no information conditions.

**Examining the Hypothesis**

Hypothesis 2 was examined by submitting mean scores on the attitudes toward alcohol measure to a one-way between-participants ANOVA with I-sharing Condition (I-sharing, no I-sharing, no information) as the between-participants factor. Contrary to prediction, no main effect of I-sharing Condition was observed, $F$ (2, 191) = .09, $p$ = .918. Instead, the mean scores were similar across the I-sharing condition ($M$ = 3.31, $SD$ = 1.22), no I-sharing condition ($M$ = 3.40, $SD$ = 1.32), and no information condition ($M$ = 3.34, $SD$ = 1.26) were not significantly different.

## Hypothesis 3

Hypothesis 3 examined participants' attitudes towards those who do not drink alcohol. It was hypothesized that participants in the I-sharing condition would report more positive attitudes toward those who do not drink alcohol than participants in the no-I sharing and no information conditions.

**Examining the Hypothesis**

Hypothesis 3 was examined by submitting mean scores on the measure of attitudes towards those who do not drink alcohol to a one-way between-participants ANOVA with I-sharing Condition (I-sharing, no I-sharing, no information) as the between-participants factor. Contrary to prediction, no main effect of I-sharing Condition was observed, $F$ (2, 187) = .067, $p$ = .935. Instead, the mean scores across the I-sharing condition ($M$ = 5.67, $SD$ = .81), no I-sharing condition ($M$ = 5.62, $SD$ = .69), and no information condition ($M$ = 5.63, $SD$ = .73) were not significantly different.

## Hypothesis 4

Hypothesis 4 examined participants' liking for their interaction partner. It was hypothesized that participants in the I-sharing condition would report greater liking for the interaction partner than participants in the no I-sharing and no information conditions.

### Examining the Hypothesis

Hypothesis 4 was examined by submitting mean liking scores to a one-way between-participants ANOVA with I-sharing Condition (I-sharing, no I-sharing, no information) as the between-participants factor. A main effect of I-sharing Condition was observed, $F$ (2, 190) = 13.18, $p < .001$. Post hoc comparisons using the Tukey HSD test indicated that, as expected, liking was significantly greater in the I-sharing condition ($M = 4.24$, $SD = 1.29$) than in the no I-sharing condition ($M = 3.01$, $SD = 1.32$, $p < .001$) and the no information condition ($M = 3.30$, $SD = 1.59$, $p = .001$). However, liking was equivalent in the no I-sharing condition and the no information condition ($p = .461$).

## Hypothesis 5

Hypothesis 5 examined participants' perceived similarity with their interaction partner. It was hypothesized that I-sharing would increase perceptions of subjective similarity, but not objective similarity, with the interaction partner. Therefore, it was expected that participants in the I-sharing condition would indicate greater subjective similarity with their interaction partner than participants in the no I-sharing and no information conditions. However, no differences were expected in objective similarity ratings between the I-sharing, no I-sharing, and no information conditions.

**Examining the Hypothesis**

The subjective similarity aspect of Hypothesis 5 was examined by submitting subjective similarity scores to a one-way between-participants ANOVA with I-sharing Condition (I-sharing, no I-sharing, no information) as the between-participants factor. As expected, a main effect of I-sharing Condition was observed, $F$ (2, 192) = 17.57, $p < .001$. Post hoc comparisons using the Tukey HSD test indicated that subjective similarity ratings were higher in the I-sharing condition ($M = 4.29$, $SD = 1.16$) than in the no I-sharing condition ($M = 2.86$, $SD = 1.32$, $p < .001$) and the no information condition ($M = 3.48$, $SD = 1.55$, $p = .003$). Additionally, subjective similarity ratings were higher in the no information condition than in the no I-sharing condition ($p = .027$).

To examine the objective similarity part of the hypothesis, objective similarity scores were submitted to a one-way between-participants ANOVA with I-sharing Condition (I-sharing, no I-sharing, no information) as the between-participants factor. Unexpectedly, a main effect of I-sharing Condition was observed, $F$ (2, 192) = 8.69, $p < .001$. Post hoc comparisons using the Tukey HSD test indicated that objective similarity ratings were higher in the I-sharing condition ($M = 4.49$, $SD = 1.39$) than in the no I-sharing condition ($M = 2.34$, $SD = 1.44$, $p < .001$). However, the I-sharing condition did not differ significantly from the no information condition ($M = 3.91$, $SD = 1.80$, $p = .088$) and the no I-sharing condition did not differ significantly from the no information condition ($p = .095$).

Due to the sample size of the follow-up, the data collected to address Hypothesis 6, 7, and 8 were not considered meaningful. Although conclusions cannot be drawn from these analyses, an explanation of each hypothesis and the statistical analysis utilized are offered in the interest of thoroughness.

## Hypothesis 6

Hypothesis 6 examined participants' actual drinking behavior two weeks after they completed the main portion of the study. It was hypothesized that I-sharing with a partner who does not drink alcohol would produce less consumption of alcohol during the two weeks between completion of the main portion of the study and participation in the follow-up portion of the study. It was expected that, in their responses to the follow-up portion of the study, participants in the I-sharing condition would report less alcohol use in the previous two weeks compared to participants in the no I-sharing and no information conditions.

### Examining the Hypothesis

Hypothesis 6 was examined by submitting the number of alcoholic drinks participants reported that they had consumed during the two weeks between the main portion of the study and the follow-portion of the study to a one-way between-participants ANCOVA with I-sharing Condition (I-sharing, no I-sharing, no information) as the between-participants factor and post-intervention intentions as the covariate. No main effect for I-sharing condition was observed $F$ (2, 15) = 1.64, $p$ = .243. Instead, the mean scores across the I-sharing condition ($M$ = 1.80, $SD$ = 2.49), no I-sharing condition ($M$ = 2.60, $SD$ = 3.13), and no information condition ($M$ = 2.00, $SD$ = 1.92) were not significantly different. Additionally, post-intervention intentions did not emerge as a significant covariate $F$ (1, 15) = 1.70, $p$ = .221.

## Hypothesis 7

Hypothesis 7 examined participants' attitudes towards alcohol two weeks after they completed the main portion of the study. It was hypothesized that I-sharing with a partner who does not drink alcohol would diminish participants' attitudes toward alcohol and that those diminished attitudes would be observed two weeks after the partner interaction. In their

responses to the follow-up portion of the study, it was expected that participants in the I-sharing condition would report less positive attitudes toward alcohol than participants in the no I-sharing and no information conditions.

**Examining the Hypothesis**

Hypothesis 7 was examined by submitting mean scores on the attitudes toward alcohol follow-up measure to a one-way between-participants ANOVA with I-sharing Condition (I-sharing, no I-sharing, no information) as the between-participants factor. No main effect of I-sharing Condition was observed, $F$ (2, 16) = 2.32, $p$ = .135. Instead, the mean scores across the I-sharing condition ($M$ = 4.01, $SD$ = 1.23), no I-sharing condition ($M$ = 4.03, $SD$ = .96), and no information condition ($M$ = 2.81, $SD$ = 1.25) were not significantly different.

## Hypothesis 8

Hypothesis 8 examined participants' attitudes towards those who do not drink alcohol two weeks after they completed the main portion of the study. It was hypothesized that I-sharing with an interaction partner who does not drink alcohol would improve evaluations of people in general who do not drink alcohol and that those improved evaluations would be observed two weeks after the partner interaction. In their responses to the follow-up portion of the study, it was expected that participants in the I-sharing condition would report more positive attitudes toward those who do not drink alcohol than participants in the no-I sharing and no information conditions.

**Examining the Hypothesis**

Hypothesis 8 was examined by submitting mean scores on the attitudes towards those who do not drink alcohol follow-up measure to a one-way between-participants ANOVA with I-sharing Condition (I-sharing, no I-sharing, no information) as the between-participants factor.

No main effect of I-sharing Condition was observed, $F$ (2, 16) = 1.12, $p$ = .355. Instead, the mean scores across the I-sharing condition ($M$ = 5.63, $SD$ = .99), no I-sharing condition ($M$ = 6.10, $SD$ = .79), and no information condition ($M$ = 6.36, $SD$ = .74) were not significantly different.

## Ancillary Analyses

Analyses were conducted to determine whether participants' scores on the ruler of change measure were related to their drinking intentions or their attitudes. To begin, correlational analyses were performed to examine the relationship between the ruler of change and pre-intervention intentions to drink alcohol, post-intervention intentions to drink alcohol, the difference between pre- and post-intervention intentions to drink alcohol, attitudes toward alcohol, and attitudes toward those who do not drink alcohol. No significant relationships were found. Additionally, regression analyses were performed to determine whether scores on the ruler of change measure moderated the effect of I-sharing condition on any of the dependent measures, including post-intervention intentions to drink alcohol, change in drinking intentions from pre-intervention to post-intervention, attitudes towards alcohol, attitudes towards those who do not drink alcohol, liking, subjective similarity, and objective similarity. For each dependent measure, the regression analysis included the following predictors: I-sharing condition, the continuous ruler of change measure, and the interaction between I-sharing condition and the ruler of change. For every dependent measure, the interaction term was not significant, indicating that the ruler of change did not moderate the effect of I-sharing condition on any of the dependent measures. Additionally, for most of the dependent measures, the ruler of change did not emerge as a significant predictor. However, the ruler of change was a significant predictor of objective similarity ratings (B = -.13, β = -.23, $t$ = -2.50, $p$ = .014).

The gender of the participants was also examined as a moderator of the effect of I-sharing condition on the variables of interest in the study. Gender was added as an additional factor to the ANOVAs examining the effect of I-sharing condition on change in drinking intentions, attitudes toward alcohol, attitudes toward those who do not drink alcohol, liking, subjective similarity, and objective similarity. There were no main effects of Gender or interactions between I-sharing Condition and Gender, with one exception. For objective similarity, there was a main effect of Gender, $F$ (1, 186) = 4.09, $p$ = .044, with females reporting greater perceptions of objective similarity ($M$ = 4.02) than males ($M$ = 3.46).

Finally, a set of analyses were performed to further examine the finding that I-sharing affected subjective similarity ratings and objective similarity ratings in similar ways. Correlational analyses revealed a significant relationship between liking and subjective similarity ($r$ = .60, $p$ < .001), and between liking and objective similarity ($r$ = .40, $p$ < .001). Partial correlational analyses were performed to determine whether these significant relationships would persist when controlling for the other type of similarity. The relationship between liking and subjective similarity remained significant when controlling for objective similarity, $r$ = .50, $p$ < .001. However, the relationship between liking and objective similarity was no longer significant when controlling for subjective similarity, $r$ = -.07, $p$ = .358. These analyses demonstrate that feelings of subjective similarity make a strong and unique contribution to liking.

# CHAPTER V

# DISCUSSION

## Overview of the Findings

As hypothesized, the present study found that participants in the I-sharing condition reported greater liking for their interaction partner than participants in the no I-sharing and no information conditions. Additionally, the present study found that individuals in the I-sharing condition reported greater perceived similarity to their interaction partner than participants in the no I-sharing and no information experimental conditions. However, the expected effect of I-sharing on the intention to drink alcohol and alcohol-related attitudes was not found. The present study failed to find any difference in attitudes towards alcohol or attitudes towards those who do not drink alcohol according to I-sharing condition. The present study also failed to find evidence that I-sharing reduced the number of alcoholic drinks participants intended to consume more so than the no I-sharing and no information conditions. Surprisingly, however, a reduction in the number of alcoholic drinks participants intended to consume was observed in all three experimental conditions. This result has multiple possible interpretations and these interpretations are explored below. Unfortunately, only 17 participants provided usable data in the follow-up portion of the study, so meaningful conclusions and interpretations could not be drawn from the available data.

## Why Did the Intention to Drink Alcohol Decline Across Conditions?

As indicated above, a surprising and noteworthy finding emerged in the present research in that the number of alcoholic drinks participants intended to consume in the coming 30 days declined across conditions from pre-intervention to post-intervention. This result suggests that some feature of the experiment that was shared across conditions, and not the I-sharing

manipulation, was responsible for the observed effect. The TLFB, for example, has been used as a part of other interventions to decrease alcohol use (Chang, Wilkins-Haug, Berman, & Goetz, 1999; Miller, Benefield, & Tonigan, 1993). While the TLFB was never determined to be a primary driver of change in these studies, its incorporation in the present research may have contributed to the decline in alcohol-use intentions that was observed across conditions. If so, then the incorporation of the TLFB in the present study may have contributed to the observed decreases in alcohol use intentions across conditions. However, because the TLFB was administered before the pre-intervention measure of alcohol-use intentions was taken, it is unlikely that the TLFB contributed to decreases in alcohol use intentions in isolation. However, the possibility of a delayed effect, or an effect that accumulates in strength over time, cannot be ruled out.

The testimonial portion of the study was also shared across the experimental conditions. All participants wrote about their alcohol consumption and the reasons why they choose to drink or not drink alcohol. Similarly, cognitive dissonance research has often utilized testimonials in behavior change interventions. Cognitive dissonance is the discomfort an individual feels when their behavior does not correspond with their values and self-views (Festinger, 1957; Aronson, 1969). Past studies have used testimonials to elicit cognitive dissonance in participants in efforts to change their behavior. For example, Aronson, Fried, and Stone (1991) asked participants to create a video message urging watchers to use more condoms in order to increase condom use intentions among participants. Another study by Dickerson, Thibodeau, Aronson, and Miller (1992) asked participants to create flyers urging others to conserve water, which increased participants' intention to conserve more water. There was an important difference between the testimonials employed in these examples and the testimonial that was employed here, in that

participants in the current research were not asked to tell others what to do, just to report on their own alcohol consumption. Nonetheless, the testimonial portion of the current study could have highlighted discrepancies between participants' alcohol-related values and their alcohol-related behavior. If so, the testimonial may have inadvertently created cognitive dissonance in participants. In order to reduce their feelings of discomfort, they may have decreased their intention to drink alcohol in the future.

It also may be the case that the social distracter questions influenced the observed results. Over the course of the study, these questions may have reminded participants of other social activities like watching movies with others, engaging in social gatherings, and going to restaurants, which may have led them to have less desire to drink alcohol in the future. In other words, the social distractor questions may have inadvertently given participants other recreational options besides drinking alcohol. With more recreational options easily accessible in their minds, participants may have felt less need to drink alcohol. Additionally, it may be the case that the distractor questions served to take the pressure off of participants to change their alcohol use. This may have allowed participants to be more comfortable throughout the study and more apt to engage with the study tasks and measures.

Another plausible explanation for the observed results is that the experimenter-designed testimonial may have altered participants' perceptions about the social drinking norms on the IUP campus. The testimonial all participants read indicated that their partner did not drink alcohol, and it listed multiple reasons why they chose to not drink. Research on social norms approaches on college campuses has found that college students often hold inflated perceptions of how much other students are drinking, so alcohol use can be reduced when students are presented with accurate information about the overall alcohol use on campus (Borsari &Carey,

2001; Borsari & Carey 2003; Lewis & Neighbors, 2004; Southern Illinois University Carbondale, 2014). Although the testimonial only dealt with one specific case of alcohol use on the IUP campus, it is possible that participants generalized this one student's perspective to suggest that perhaps drinking is less common among their peers than they thought. If so, then participants may have reduced their intention to drink alcohol in the future to better align with their adjusted perceptions of the relevant social norms.

The experimenter-designed testimonial may have led to the observed results in another way, by providing participants with anecdotal evidence concerning alcohol use on the IUP campus, the different activities on campus that do not involve drinking alcohol, and the overall perception of the consequences involved with drinking alcohol on the IUP campus. This information may have been persuasive to participants and contributed to the observed decrease in their intention to drink alcohol. Research has found that anecdotal evidence can be highly persuasive to individuals, sometimes equally or even more persuasive than statistical and/or causal evidence (Baesler, 1997; Cox & Cox, 2001; Koballa, 1986; Kazoleas, 1993; Hoeken, 2001; Hornikx, 2005). Furthermore, research by Slater and Rouner (1996) specifically looked at the persuasiveness of statistical versus anecdotal alcohol related messaging that was either value-congruent (matched the values of the participants) or value-discrepant (did not match the values of the participants). The results found that for individuals who viewed value-congruent alcohol related messaging, statistical evidence was viewed as more persuasive, more believable, and better written than anecdotal evidence. However, individuals who viewed value-discrepant alcohol related messaging actually found the anecdotal evidence to be more persuasive, more believable, and better written than statistical evidence (Slater & Rouner, 1996). A similar process may have occurred in the current study. The experimenter-designed testimonial may

have provided anecdotal evidence that was value-discrepant to some of the participants and therefore helped motivate them to decrease their intention to drink alcohol.

One final plausible explanation of the observed results is that participants socially tuned their alcohol use intentions across experimental conditions. All participants interacted with a faux partner who stated that s/he abstained from alcohol use. It may the case that the participants viewed the faux participant as being a member of a proximal reference group in that they knew they were an IUP student participating in the same study. Moreover, all participants believed that they shared at least two features of objective similarity with their partner: their gender and their residential background. This may have been enough to lead participants to want to affiliate with their partner and therefore socially tune their own alcohol drinking intentions to those of their partner. Although liking varied in the predicted way across the experimental conditions, with the most liking reported in the I-sharing condition, it is possible that the liking measure may not have fully captured participants' affiliative motivation.

Although each interpretation has been presented in isolation, it is important to note that any of them could have combined to produce the reduction in alcohol-use intentions that was observed across conditions. For example, the combination of the TLFB (which made participants acutely aware of their past behavior) and the testimonial (which may have highlighted a conflict between values and behavior) may have been necessary to produce a state of cognitive dissonance. Additionally, it is possible that the TLFB and the testimonial portion may have combined to highlight a discrepancy between participants' actual behavior and their ideal behavior. Highlighting this type of discrepancy is the aim of motivational interviewing interventions (Miller & Rollnick, 1992; Miller & Rollnick, 2012; Rollnick & Miller, 1995). Motivational interviewing techniques have long been used in substance abuse treatment and have

been shown to lead to increased internal motivation for changing substance use behaviors (Miller & Rollnick, 2012; Smedslund et al., 2011). This combination of study elements may have increased participants' internal motivation to change and thus contributed to the participants' decreased intention to drink alcohol. Both of the above effects could have been enhanced by the awareness of social norms on the IUP campus that stemmed from the testimonial, if some of participants came to believe that their own behavior was not comparable to their peers. The partner's comment that "I feel that there are plenty of fun things to do here at IUP without drinking" may have reinforced the other social options that were highlighted in the distractor questions. Thus, it is possible that the full combination of study elements was necessary to produce the observed results.

**Why Did No Differences in Attitudes Emerge Across Conditions?**

As noted above, no differences emerged across conditions regarding the attitudes participants had towards alcohol and those who do not drink alcohol. However, because there was no pre-intervention measure of these attitudes, it remains unknown whether these attitudes were unchanged by the study or whether they were affected in the same way across conditions, like drinking intentions were. It may be the case that some feature(s) of the study, either in isolation or in combination, did indeed lead to changes in attitudes, but, without pre-intervention attitude measures, the design of the study was not able to detect that change. Additionally, the alcohol demographic information for IUP students was researched prior to the development of the current study, but no meaningful measure of pre-existing attitudes among IUP students towards alcohol and those who do not drink alcohol existed. Thus, it was not possible to obtain a baseline understanding of attitudes from another source outside the study.

Another potential explanation for why no effect of I-sharing was observed for attitudes towards alcohol or attitudes towards those who do not drink alcohol is because of the measures that were used. Although the experimenter-designed attitude measures appeared to possess face validity, they were not validated to ensure strong psychometric properties. Therefore, it is not known at the current time whether the attitude measures adequately measured participants' attitudes. Utilizing measures with a strong research backing would be an important avenue for future research, as well as the possible validation of the experimenter-generated measures.

**Should Future Research Abandon I-Sharing as an Alcohol Use Intervention?**

As indicated above, the current study did not observe any effect of I-sharing on intentions to drink alcohol, attitudes towards alcohol, or attitudes towards those who do not drink alcohol. Although it is possible that I-sharing cannot alter alcohol-related intentions or attitudes, it is also possible that the construct of I-sharing may have some utility in this context, but that the current study was not designed sufficiently to detect the positive role that I-sharing can play. In particular, the I-sharing manipulation that was used here may not have been powerful enough to affect affiliative motivation or alcohol use intentions. . Participants may not have felt connected to their I-sharing interaction partner because Qualtrics was not able to allow participants to see their partner and their reactions, hear them and their reactions, or communicate with them directly. The I-sharing manipulation used in the current study could have been more natural and impactful to participants had an online modality been used that is more widely used with college students. Social media and mobile apps like Snapchat, may be able to be manipulated in a way that could make I-sharing more effective to college aged individuals because it is more salient to them. Additionally, the I-sharing manipulation may have been stronger had the modality been in person. Had the current study replaced the online modality with an in-person interaction, it is

possible that the I-sharing manipulation would have been stronger and thus exerted an effect on alcohol-use intentions. While direct face-to-face interactions could reduce experimental control and add error variance, they may strengthen the I-sharing manipulation and allow for a greater change in alcohol-related intentions and attitudes to be observed. If future research supports the efficacy of in-person I-sharing manipulations to reduce alcohol consumption, college campuses could harness this technique in multiple ways. For example, peer mentors or advisors could foster I-sharing experiences as part of awareness programs regarding alcohol use. Another way that face-to-face I-sharing could assist in campus alcohol-reduction efforts could be through clubs and organizations on campus. Clubs and organizations that meet in person could implement activities that elicit I-sharing like performing and watching improv comedy, or creating art or music together. Again, it could be possible for this type of I-sharing to be paired with information regarding alcohol use on campus.

## Strengths

The current study had multiple successes that are worth highlighting. Most importantly, it was able to show that alcohol use intentions can be diminished through a computer interaction with a faux partner. This effect was unexpected and may be the first step to a novel intervention that can be administered on college campuses. The intervention framework used in the current study was relatively cheap to administer and involved minimal campus resources. Ideally, this framework could be used in combination with other campus efforts to decrease alcohol use like social norms approaches, direct alcohol use interventions, and cultural transformative programs that aim to involve community partners as well as campus resources. Furthermore, it may be possible to utilize this methodology and framework to alter other behavioral intentions. Future

research investigating this framework for interventions related to condom use, tobacco smoking, gambling, and vaping tobacco, among other behaviors of interest, may be warranted.

Another important strength of the current study stemmed from the impact of I-sharing on liking and perceived similarity. The current study can be seen as a replication of the results that have been obtained in previous research (Pinel et al., 2004; Pinel et al., 2006; Pinel & Long, 2012). While I-sharing was not found to impact alcohol-use intentions, the liking and similarity associated with I-sharing could still be utilized in other ways. Previous research has shown that I-sharing can reduce prejudice toward outgroup members and the infrahumanization of outgroups (Long et al., 2017; Pinel et al., 2017; Pinel et al., 2018). Applying these findings to college campuses presents the possibility that I-sharing could be used to develop bonds among individuals at universities that might help lessen divisions regarding politics, race, age, and other current social hot-button issues, or even help decrease violence. Future research that expands our understanding of the role that I-sharing can play in these phenomena could not only help I-sharing be applied in other contexts, but also could continue to develop our understanding of this unique psychological construct.

## Limitations

The current study should be considered in the context of its limitations. One of the most salient limitations of the current study is the low number of participants who returned for the follow-up portion. This makes it difficult to determine whether participants reduced their actual alcohol use, and, if so, whether experimental condition affected this outcome. Attrition is often a factor in multi-part studies (Rubin, 1976; Little and Rubin, 2002). Had the current research offered more incentive for the follow-up portion, perhaps more participants would have taken part in it, and this could have produced a better understanding of the study's impact on actual

alcohol consumption. Other factors that may have contributed to the small sample size for the follow-up include the following: approximate dates of data collection, the use of email for delivering the follow-up survey, and the complex system used by the experimenters to recruit participants for the follow-up. Regarding the approximate dates of data collection, most of the data was collected between March and April 2018. The beginning of this period of the spring semester coincided with St. Patrick's Day and the end coincided with the end of classes. St. Patrick's Day is a holiday characterized at IUP by the consumption of alcohol. If some participants overconsumed alcohol during this time period, they may have felt nervous about sharing that information in the study and thus less motivated to return for the follow-up. As the end of the semester drew near, it may be the case that participants no longer needed the additional research credit that they would have received from the follow-up. Participants had other opportunities to earn research credit throughout the semester, and many may have completed the research requirement before the follow-up was offered. Regarding the use of email for delivering the follow-up survey, it may be the case that many of the participants who showed interest in participating in the follow-up never checked their IUP email. Had there been a different delivery method for the follow-up portion, it may have been possible to obtain a larger sample size. Lastly, in regard to the recruitment of participants for the follow-up, the experimenters used a complex method for individuals to sign up. Participants were asked to follow directions to multiple Qualtrics surveys to register for participation credit and to sign up for the follow-up portion. It is possible that this complexity may have prevented some participants who would have been interested in participating from entering their contact information for the follow-up. A more innovative or direct way of recruiting participants and delivering the follow-up could have increased participation.

Another limitation of the current study comes from the sampling method. While the current study aimed to investigate the college student population at IUP, the sample represents a convenience sample. Convenience sampling has been found to produce results that may be ungeneralizable (Bornstein, Jager, & Putnick, 2017). Because the sample was not representative of the IUP student population, the results may not generalize to a different sample of IUP students. Moreover, because all participants were IUP students, the results may be ungeneralizable to other college student populations. Other universities have different social drinking norms, different alternatives to alcohol use available, and overall different demographics. The same intervention may not have been able to decrease alcohol use intentions had it been conducted at another university. Future research that aims to investigate whether the results generalize to other populations could be an important avenue.

The inability of the current study to pinpoint what aspect or aspects of the study led to the observed results is another limitation of the current study. As indicated above, the procedure was complex and involved many tasks and measures. The conjunction of these tasks and measures or any of the tasks in isolation may have led to the observed results. In particular, there was an observed decrease in the intention to use alcohol from pre-intervention to post-intervention across conditions. It may be the case that just one aspect of the study that was shared across conditions led to the decrease in alcohol use intentions, or it could be a combination of multiple aspects of the study. Future research may benefit from investigating these possibilities. This future research direction and others are explored below.

## Future Directions

With the limitations and strengths in mind, the current study offers several opportunities for potentially fruitful future research directions. Future studies could elucidate lingering

questions raised by the current study. One such question is, what actually led to the observed results? It appears clear that I-sharing was not the main contributor to the changes observed in alcohol-use intentions. A deconstruction study identifying what aspect(s) of the study led to the observed changes in alcohol-use intentions may be warranted. Specifically, researchers could isolate different tasks and measures of the study and test whether they lead to decreases in alcohol use intentions. This avenue of research could make the intervention as parsimonious as possible, thus further increasing its utility among college campuses. Additionally, combining different aspects of the current study and testing the combined effect on alcohol use intentions and behavior may also be warranted. As mentioned above, examining the TLFB together with the testimonial portion could have potential. This is because the TLFB could help participants become acutely aware of their past behavior and the testimonial could serve to create discrepancy between their actual behavior and their own values concerning alcohol. The testimonial the students receive also could serve to give participants a reference point concerning the social drinking norms on campus and potentially provide students with a powerful anecdote about abstention on campus. Future research that studies this combination may be productive.

In order for the framework of the current study or any of its tasks/measures to be utilized as an alcohol intervention on college campuses, meaningful effects on actual alcohol use will have to be established. Therefore, an important future direction and first step in making the current study framework applicable as college/university intervention, would be to fully investigate whether the study protocol that was utilized here, or a refined version that may be produced by deconstruction research, can lead to reductions in actual alcohol use after the intervention. Researchers would want to identify different time ranges to examine not only the intensity of the effect but also the duration of the effect. For example, researchers could measure

alcohol consumption two weeks after the initial intervention, one month after the initial intervention, three months after the initial intervention, and beyond. This would allow researchers to see how durable the effect is and how large the effect is (ie. having five drinks two weeks after the initial intervention rather than having eight drinks).

Following the deconstruction study and establishment of a meaningful change in actual alcohol use, the next step would be to implement the intervention at a college or university. This implementation could take on many forms. For example, adjusting the delivery of the framework to target incoming students during orientation could help decrease alcohol use early on and curb the perception of social norms related to campus alcohol use. This could be seen as a preventative step designed to reduce alcohol use and alcohol related consequences. Additionally, it would be recommended to administer similar "sessions" of the intervention to the student body at different points throughout their time as a student (e.g., at the end of the semester, before a major school break, and/or at the start of a new school year). Like the initial delivery during orientation, these "boosters" could correct perceptions of social norms related to campus alcohol use and ideally would decrease alcohol use campus-wide. It would also be recommended that administrators of alcohol and drug offices on campus continue to plan and promote alternative social events and activities. This combination of targeting students' alcohol use intentions and encouraging alternative behaviors could help lead to overall and sustained reductions in alcohol use on campus. Future research that could implement the intervention on a larger scale could provide an interesting test for the framework.

As indicated above, strengthening the measures used in the current study may be an important future research consideration. Researchers could benefit from using existing measures that were unattainable for the current study to measure attitudes. Researchers may also benefit

from establishing the construct validity of the novel, experimenter-designed measures. Improvements in these measures would allow greater confidence that they are indeed measuring what they were designed to measure. Not only could future researchers improve the experimenter-designed measures, but they could also work to improve established measures like the TLFB. For example, a future research consideration could involve the delivery of the TLFB . In the current study, participants were unable to edit the calendar on Qualtrics directly. Novel approaches and methods of delivery that have greater capabilities than Qualtrics may be another worthwhile future research direction.

Lastly, future research that expands on the strengths of the current study may be warranted. Future research that expands our understanding of the most vital components of the study protocol could be translated to novel interventions. As shared above, future research could use similar tasks and measures in other behavioral interventions that are important for college campuses including gambling, tobacco use, and condom use. The results of the current study point to the possibility that the protocol employed here (or a refined version of it) could be one piece of many future opportunities for impact on college campuses.

## Summary

Even though the current study generates many questions, the implications of the study hold some promise. Alcohol use remains a salient public health issue that appears throughout the United States. On college and university campuses, multiple strategies have been defined and utilized in efforts to curb the consequences and overall use of alcohol. The current study was able to demonstrate that an inexpensive intervention on the computer can diminish alcohol use intentions among college students at IUP. While the mechanism of this change in behavioral intentions remains unknown, the current study makes an important contribution to our shared

understanding of this problem and highlights the complexities involved in changing a person's intentions, attitudes, and behaviors. Research funding in this area will be important for supporting a continued search for interventions and strategies that target alcohol use on college campuses. In particular, funding that supports further investigation of the intervention framework used in this study may be warranted. Future research expanding our understanding of alcohol use on college campuses, along with interventions that target alcohol-related attitudes and behavioral change, continue to represent important paths for future research.

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# Appendix A

## SONA Information

Name of Study: Social Connections Study

Description: The purpose of the study is to investigate social connections and social behaviors individuals engage in including alcohol use. Participants will be asked to perform a series of tasks including; answering questions regarding their social and alcohol behaviors and attitudes, and engaging in a celebrity game with an online partner.

Eligibility requirements: Participants must be at least 18 years old.

How long will the study take: 60 minutes

Number of credits: 1 credit

## Appendix B

## Informed Consent Form

You are invited to participate in a study investigating alcohol use and other social behaviors. If you agree to participate in this study, you will be asked questions on the computer about yourself and your social behaviors, and you will also be asked to participate in some computer tasks. The study should take about 60 minutes.

The answers that participants provide in this study will be anonymous. All responses will be compiled and examined together. In other words, no one's data will be looked at individually. The responses that participants provide will be combined together and examined for general themes. We will not be able to identify you through your responses and we will not be able to use any information in your responses to identify your specific responses. Findings from the research may be presented at professional conferences and/or published in academic journals or books, but the identity of all participants will always remain confidential.

There are no known risks associated with participating in this study. However, participants may find the study interesting, and may learn more about how psychological research is conducted.

To be eligible for this study, you must be a PSYC 101 student and be at least 18-years-old. Your participation in this study is completely voluntary. You may choose not to participate in this study. If you decide to participate and you change your mind later, you may withdraw at any time during the study by closing your web browser. You may also leave blank any question that you would prefer not to answer.

Participation in this study is worth 1.0 research credits. If you would prefer not to participate in this study, research credits may be earned instead by participating in other research studies and/or reading and reviewing scientific articles. Credit will be granted for your participation through a separate Qualtrics survey in which you will be able to input your identifying information. This second Qualtrics survey will be completely separate from your responses and your identifying information cannot be used to identify your responses. The experimenter will use this identifying information only for the purposes of providing you credit for participating.

If you have any questions about this research, you may contact the principal investigator, Timothy Carnevale, by email at SLGV@iup.edu or the project supervisor, Dr. Anson Long, by email at anson.long@iup.edu or by phone at 724-357-4523.

This study has been approved by the Indiana University of Pennsylvania Institutional Review Board for the Protection of Human Subjects (phone: 724-357-7730).

If you are willing to participate in this study, please indicate that below by clicking to continue on to the study.

Appendix C

Introduction

Hello!

Thank you for participating in the study! Today you will be completing a series of tasks on the computer. We hope to learn more about social and drinking behaviors. In particular, we would like to learn more about the similarity of social behaviors and alcohol use among two members of the same cohort. Put simply, we would like to see how alike (or different) your social behaviors and alcohol use are to your fellow college students, who are also participating in this study. After you complete some tasks on your own, we will pair you up with another student taking the same study you are for a few partner tasks. The computer will present instructions for each task as you go along.

Thank you again for participating!

Appendix D

Timeline Followback Example and Questions

# TIMELINE FOLLOWBACK CALENDAR: 2018

**1 Standard Drink is Equal to**


One 12 oz can/bottle of beer


One 5 oz glass of regular (12%) wine


1 ½ oz of hard liquor (e.g. rum, vodka, whiskey)


1 mixed or straight drink with 1 ½ oz hard liquor

**Complete the Following**

**Start Date** (Day 1): _____ **End Date** (yesterday): _____

MO DY YR MO DY YR

| 2018 | SUN | MON | TUES | WED | THURS | FRI | SAT |
|---|---|---|---|---|---|---|---|
| | | 1 New Year's | 2 | 3 | 4 | 5 | 6 |
| J | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| A | 14 | 15 M. Luther King | 16 | 17 | 18 | 19 | 20 |
| N | 21 | 22 | 23 | 24 | 25 | 26 | 27 |
| | 28 | 29 | 30 | 31 | 1 | 2 | 3 |
| F | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| E | 11 | 12 | 13 | 14 Valentine | 15 | 16 | 17 |
| B | 18 | 19 Pres. Day | 20 | 21 Ash Wednesday | 22 | 23 | 24 |
| | 25 | 26 | 27 | 28 | 1 | 2 | 3 |
| M | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| A | 11 | 12 | 13 | 14 | 15 | 16 | 17 St. Patrick |
| R | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
| A | 1 | 2 | 3 Passover | 4 | 5 | 6 Good Friday | 7 |
| P | 8 Easter | 9 | 10 | 11 | 12 | 13 | 14 |
| R | 15 | 16 | 17 | 18 | 19 | 20 | 21 |
| | 22 | 23 | 24 | 25 | 26 | 27 | 28 |
| | 29 | 30 | 1 | 2 | 3 | 4 | 5 |
| M | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| A | 13 Mother's Day | 14 | 15 | 16 | 17 | 18 | 19 |
| Y | 20 | 21 | 22 | 23 | 24 | 25 | 26 |
| | 27 | 28 Memorial Day | 29 | 30 | 31 | | |

TLFB Questions

Please use the above calendar and think about the last 30-days from today's date to answer the following questions.

*Please note one standard drink equals 12 ounces of beer, 5 ounces of wine, or 1.5 ounces of liquor*.

1) Please look at the above calendar. You will notice that national holidays and campus wide events are labeled. Now please think about other memorable events in the last 30-days. These events would include the following: parties, concerts, personal holidays, sporting events, etc. Please list each of those dates below.
2) On how many occasions in the past 30-days have you consumed alcohol? If you would rather not answer please write in "decline to answer."
3) For each of those occasions please indicate how many alcoholic drinks you consumed.
4) Using your best estimate, how many total standard alcoholic drinks did you consume during the past 30-days? If you would rather not answer please write in "decline to answer."
5) Using your best estimate, how many occasions did you engage in a social gathering with more than three people in the past 30-days? If you would rather not answer please write in "decline to answer."
6) Using your best estimate, how many movies did you watch with others in the past 30-days? If you would rather not answer please write in "decline to answer."
7) Using your best estimate, how many occasions did you eat out at a restaurant with others in the past 30-days? If you would rather not answer, please write in "decline to answer."

Appendix E

Rulers of Change

(Labrie et al., 2005)

On the ruler below, please indicate the number that best describes how you feel right now about your drinking:

0---------1----------2----------3----------4----------5----------6----------7----------8----------9----------10

| | | | | |
|---|---|---|---|---|
| I Never think about my drinking | Sometimes I think about drinking less | I have decided to drink less | I am already trying to cut back on my drinking | My drinking has changed. I now drink less than before |

On the ruler below, please indicate the number that best describes how you feel right now about your social involvement:

0---------1----------2----------3----------4----------5----------6----------7----------8----------9----------10

| | | | | |
|---|---|---|---|---|
| I Never think about my social involvement | Sometimes I think about drinking socializing more or less | I have decided to socialize more or less with others | I am already trying to socialize more or less with others | My social involvement has increased or decreased |

On the ruler below, please indicate the number that best describes how you feel right now about making new friends:

0---------1----------2----------3----------4----------5----------6----------7----------8----------9----------10

| | | | | |
|---|---|---|---|---|
| I Never think about making new friends | Sometimes I think about making new friends | I have decided to make new friends | I am already trying to actively make new friends | I have made new friends recently |

Appendix F

Demographic Exchange

For the next part of the study you will be paired with another participant for a series of computer tasks. Your partner will be another PSYC 101 student who is participating in the study at the same time as you.

Please indicate your demographic information on the next page. This information is being entered by both you and your partner and will be exchanged after you both hit the "next" button at the bottom of the next screen.

1. What is your Gender?
    - Male
    - Female
    - Non-Binary/Other
2. Please enter your age _____
3. What is your racial identity
    - White
    - Hispanic or Latino
    - Black or African American
    - Native American or American Indian
    - Asian / Pacific Islander
    - Other
4. What is your year in school?
    - Freshman
    - Sophomore
    - Junior
    - Senior
    - Graduate Student
    - Other
5. Please enter your major of study (if undecided please enter “undecided”)
6. What is your residential background?
    - I am from an urban neighborhood
    - I am from a suburban neighborhood
    - I am from a rural background
    - I am from a small town
    - I am from a different residential background than the four above
    - I am not sure how to describe my residential background

Appendix G

I-sharing Manipulation Questions

1. If Beyonce were a sea creature, which sea creature would she be?
    a. Hammerhead shark
    b. Crab
    c. Octopus
    d. Dolphin
2. If Jimmy Fallon were a musical instrument, which musical instrument would he be?
    a. Violin
    b. Triangle
    c. Organ
    d. Saxophone
3. If Elton John were a flying object, which flying object would he be?
    a. Blimp
    b. Glider
    c. Lear jet
    d. Frisbee
4. If Miley Cyrus were a power source, which power source would she be?
    a. Coal
    b. Nuclear
    c. Steam
    d. 9 volt battery
5. If Justin Timberlake were a writing implement, which writing implement would he be?
    A. Chalk
    b. Spray paint
    c. Fountain pen
    d. Crayon
6. If Kim Kardashian were an insect, which insect would she be?
    a. Butterfly
    b. Praying mantis
    c. Ant
    d. Wasp
7. If Will Smith were a mode of transport, which mode of transport would he be?
    a. Jogging
    b. Hot rod
    c. Corporate jet
    d. Pogo stick

8. If Neil Patrick Harris were a light source, which light source would he be?
    a. Laser beam
    b. Flashlight
    c. Sun
    d. Lightning
9. If Oprah Winfrey were a thing to look through, which thing to look through would she be?
    a. Telescope
    b. Reading glasses
    c. Rose colored glasses
    d. Safety goggles
10. If Ellen DeGeneres were a toy, which toy would she be?
    a. Chemistry set
    b. Teddy bear
    c. Transformers
    d. Play dough

## Appendix H

## Liking Measure

Participants will respond to these items using a scale ranging from 1 (not at all) to 7 (very much).

1) To what extent do you feel close to your partner?
2) To what extent could you imagine becoming friends with your partner?
3) To what extent would you feel comfortable meeting your partner?
4) To what extent would you look forward to meeting your partner?
5) To what extent do you like your partner?

## Appendix I

### Measures of Objective and Subjective Similarity

Participants will respond to these items using a scale ranging from 1 (not at all) to 7 (very much).

Objective Similarity

1. To what extent do you think that you and your partner come from similar backgrounds?

2. To what extent do you think that you and your partner come from similar families?

3. To what extent do you think that you and your partner grew up in neighborhoods with similar features?

Subjective Similarity

1. To what extent do you think that you and your partner would have the same views on issues?

2. To what extent do you think that you and your partner would have common interests?

3. To what extent do you think that you and your partner would “get” each other?

## Appendix J

### Testimonial Prompt

Please write a short paragraph for your partner about your alcohol use by answering the following questions: *Do you drink alcohol? Why do you choose to drink or not to drink? What are your top three reasons for drinking or not drinking alcohol? Is drinking alcohol important to you? Why or why not?*

### Experimenter Generated Testimonial

Please read your partner's testimonial carefully. You may be asked questions about it later.

I do not drink alcohol. I choose not to drink alcohol because of some of the negative impacts drinking can have on my life. My first reason for why I do not drink is that I am afraid that drinking could impact my grades at school. Secondly, I do not want to do something that I am going to regret after a night of drinking. Thirdly, I would hate to get in trouble because of drinking. I do not want to get in trouble with my parents, IUP, or the police. Drinking alcohol is not important to me because I have found many fun things to do on the IUP campus that don't involve drinking.

Appendix K

Experimenter Generated Attitudes Questionnaire

Please indicate your agreement with the following statements using the following key.

1= Strongly disagree
2=Disagree
3= Somewhat Disagree
4= Neither agree or disagree
5= Somewhat agree
6= Agree
7= Strongly agree

Attitudes towards alcohol (Items will be presented in a random order on Qualtrics)

1) I have negative views about drinking alcohol.
2) My views on alcohol are more negative than positive.
3) There are negative consequences associated with alcohol use.
4) My views on alcohol are more positive than negative.
5) I have positive views about drinking alcohol
6) There are positive consequences associated with alcohol use.

Attitudes concerning those who do not drink alcohol (Items will be presented in a random order on Qualtrics)

7) I hold negative views about people who do not drink alcohol.
8) I would not be friends with someone who does not drink alcohol.
9) I hold positive views about people who drink alcohol
10) I would be friends with someone who does not drink alcohol
11) I like people who do not drink alcohol
12) I dislike people who do not drink alcohol

Scoring: Reverse score questions 1, 2, 3, 7, 8, and 12

Higher scores indicate more positive attitudes.

Attitudes concerning socializing with others (Items will be presented in a random order on Qualtrics)

13) I hold negative views about socializing with others
14) My views on socializing with others are more negative than positive
15) There are negative consequences associated with socializing with others
16) My views on socializing with others are more positive than negative
17) I have positive views about socializing with others
18) There are positive consequences associated with socializing with others

Attitudes concerning watching movies with others (Items will be presented in a random order on Qualtrics)

19) I hold negative views about watching movies with others
20) My views on watching movies with others are more negative than positive
21) There are negative consequences associated with watching movies with others
22) My views on watching movies with others are more positive than negative
23) I have positive views about watching movies with others
24) There are positive consequences associated with watching movies with others

Attitudes concerning going to restaurants with others (Items will be presented in a random order on Qualtrics)

25) I hold negative views about going to restaurants with others
26) My views on going to restaurants with others are more negative than positive
27) There are negative consequences associated with going to restaurants with others
28) My views on going to restaurants with others are more positive than negative
29) I have positive views about going to restaurants with others
30) There are positive consequences associated with going to restaurants with others

Appendix L

Manipulation Checks

1. Do you remember how your partner responded to the questions about celebrities?
    a. My partner gave a lot of the same responses I gave to the celebrity questions.
    b. My partner gave mostly different responses than I gave to the celebrity questions.
    c. I didn't get to see my partner's responses to the celebrity questions.
    d. I don't remember.
    e. Decline to answer

2. Do you remember how much alcohol your partner said he/she drinks?
    a. My partner doesn't drink alcohol.
    b. My partner drinks a moderate amount of alcohol.
    c. My partner drinks a high amount of alcohol.
    d. I don't remember.
    e. Decline to answer

3. Please list any reasons that you remember your partner giving for why he/she drinks or doesn't drink alcohol. If you can't remember any of the reasons he/she gave, please write "I don't remember."

Appendix M

Code Generation

Please enter a unique code using the last three digits of your phone number followed by the first letter of your birth month.

This code will be used to connect your data to a follow-up study that you will be eligible for at the end of this study. This code cannot be used to identify you, but it will be unique to you. After all the data has been connected in our database, this code will be deleted.

For example. If my phone number was 555-1234 and I was born in April my code would be

234A

Please enter your code below.

Appendix N

Abbreviated Debrief Form and Follow-up Instructions

Thank you for your participation in the study today! Your responses will help us better understand social behaviors and alcohol use. Your thoughts and feelings are important to us, so if you have any questions about this research, you may contact the principal investigator, Timothy Carnevale, by email at SLGV@iup.edu, or the project supervisor, Dr. Anson Long, by email at anson.long@iup.edu or by phone at 724-357-4523.

If you feel like you may have an alcohol problem or would like to learn more about alcohol and its related consequences, please call IUP's office of Alcohol Tobacco and Other Drugs at 724-357-1265.

**Please click on the link at the bottom of the page to receive credit for participating.**

You are now eligible to participate in a voluntary follow-up study! This study will be completely done on the computer and will ask you more questions about your social behaviors and alcohol use. If you decide to participate, this study will be sent to you through email in two weeks. This follow-up survey is completely voluntary and will take about 30 minutes to complete. By participating you will earn an additional 0.5 research credits! This research credit is completely independent of the research credit that you earned today. Please use the link at the bottom of the page. After you input your information for research credit, you be given further instructions on how to sign up for the voluntary follow-up.

**In order to grant you research credit for completing this study please click on the link below and input the necessary information.**

Appendix O

Follow-up Informed Consent

You are invited to participate in a study follow-up investigating alcohol use and other social behaviors. You are eligible to participate in this study because you completed part-1 of the study. If you agree to participate in this study, you will be asked questions on the computer about yourself and your social behaviors. The study should take about 30 minutes.

The answers that participants provide in this study will be anonymous. All responses will be compiled and examined together. In other words, no one's data will be looked at individually. The responses that participants provide will be combined together and examined for general themes. There will be no way for you to be identified based on your responses to the questions. Findings from the research may be presented at professional conferences and/or published in academic journals or books, but the identity of all participants will always remain confidential.

There are no known risks associated with participating in this study. However, participants may find the study interesting, and may learn more about how psychological research is conducted.

To be eligible for this study, you must be a PSYC 101 student and be at least 18-years-old. Your participation in this study is completely voluntary. You may choose not to participate in this study. If you decide to participate and you change your mind later, you may withdraw at any time during the study by closing your web browser. You may also leave blank any question that you would prefer not to answer.

Participation in this study is worth 0.5 research credits. If you would prefer not to participate in this study, research credits may be earned instead by participating in other research studies and/or reading and reviewing scientific articles. Credit will be granted for your participation through a separate Qualtrics survey in which you will be able to input your identifying information. This second Qualtrics survey will be completely separate from your responses and your identifying information cannot be used to identify your responses. The experimenter will use this identifying information only for the purposes of providing you credit for participating.

If you have any questions about this research, you may contact the principal investigator, Timothy Carnevale, by email at SLGV@iup.edu or the project supervisor, Dr. Anson Long, by email at anson.long@iup.edu or by phone at 724-357-4523.

This study has been approved by the Indiana University of Pennsylvania Institutional Review Board for the Protection of Human Subjects (phone: 724-357-7730).

If you are willing to participate in this study, please indicate that below by clicking to continue on to the study.

Appendix P

Follow-Up Behavior Questions

Please answer the following questions using the space provided.

Using your best estimate, how many alcoholic drinks did you consume in the past two weeks? *Note: one standard drink is 12 ounces of beer, 5 ounces of wine, and 1.5 ounces of liquor.*

Using your best estimate, on how many occasions did you engage in a social gathering with more than three people in the past two weeks?

Using your best estimate, how many movies did you view with others in the past two weeks?

Using your best estimate, how many occasions did you go out to eat at restaurants with others in the past two weeks?

Appendix Q

Follow-up Experimenter Generated Attitudes Questionnaire

Please indicate your agreement with the following statements using the following key.

1= Strongly disagree
2=Disagree
3= Somewhat Disagree
4= Neither agree or disagree
5= Somewhat agree
6= Agree
7= Strongly agree

Attitudes towards alcohol (Items will be presented in a random order on Qualtrics)

1) I have negative views about drinking alcohol.
2) My views on alcohol are more negative than positive.
3) There are negative consequences associated with alcohol use.
4) My views on alcohol are more positive than negative.
5) I have positive views about drinking alcohol
6) There are positive consequences associated with alcohol use.

Attitudes concerning those who do not drink alcohol (Items will be presented in a random order on Qualtrics)

7) I hold negative views about people who do not drink alcohol.
8) I would not be friends with someone who does not drink alcohol.
9) I hold positive views about people who drink alcohol
10) I would be friends with someone who does not drink alcohol
11) I like people who do not drink alcohol
12) I dislike people who do not drink alcohol

Scoring: Reverse score questions 1, 2, 3, 7, 8, and 12

Higher scores indicate more positive attitudes.

Attitudes concerning socializing with others (Items will be presented in a random order on Qualtrics)

13) I hold negative views about socializing with others
14) My views on socializing with others are more negative than positive
15) There are negative consequences associated with socializing with others
16) My views on socializing with others are more positive than negative
17) I have positive views about socializing with others
18) There are positive consequences associated with socializing with others

Attitudes concerning watching movies with others (Items will be presented in a random order on Qualtrics)

19) I hold negative views about watching movies with others
20) My views on watching movies with others are more negative than positive
21) There are negative consequences associated with watching movies with others
22) My views on watching movies with others are more positive than negative
23) I have positive views about watching movies with others
24) There are positive consequences associated with watching movies with others

Attitudes concerning going to restaurants with others (Items will be presented in a random order on Qualtrics)

25) I hold negative views about going to restaurants with others
26) My views on going to restaurants with others are more negative than positive
27) There are negative consequences associated with going to restaurants with others
28) My views on going to restaurants with others are more positive than negative
29) I have positive views about going to restaurants with others
30) There are positive consequences associated with going to restaurants with others

Appendix R

Code Generation Follow-up

Once again, please enter a unique code using the last three digits of your phone number followed by the first letter of your birth month. This is the same code you generated during the first part of the study.

This code is going to be used to connect your data from this follow-up study to your data from the first part of the study. This code cannot be used to identify you, but it will be unique to you. After all the data has been connected in our database, this code will be deleted.

For example. If my phone number was 555-1234 and I was born in April my code would be

234A

Please enter your code below.

Appendix S

Full Debriefing Form

Thank you for your participation in the study! We are interested in learning whether I-sharing (having identical subjective experiences) with a partner leads people to adjust their views about alcohol to be more similar to their partner's views about alcohol. This study was designed to find out whether individuals alter their attitudes and drinking intentions after I-sharing with a partner who does not drink alcohol.

To study this, we randomly assign participants to learn that their partner responds to the celebrity questions the same way they do, differently than they do, or to be unaware of their partner's responses. This is our I-sharing manipulation. Then, we lead all participants to believe that their partner does not drink alcohol. We think that people who I-share with their partner (by learning that their partner responds the same way they do to the celebrity questions) will be most likely to adjust their attitudes about alcohol to be more similar to their partner.

As you may have guessed, your partner in the study was not another human participant, but rather a computer-generated partner. Our study requires that we randomly assign participants to learn that their partner responded a certain way to the celebrity questions. If we paired up two human participants, there would be no way to control their responses. Our study also requires that all participants learn that their partner does not drink alcohol. If the partner were a real human participant, we could not control what they wrote in the alcohol testimonial.

We hope you understand why we felt it was necessary to use a pretend partner in this study, and why we felt it was necessary to hold back the true purpose of the study until sharing it with you now at the end. If we told participants our hypotheses at the beginning of the study, there is a risk that they might alter their responses, even without meaning to, which would make it difficult for us to answer our important research questions.

We are hopeful that the results of this study will increase our understanding of peer influences on alcohol use, and we truly appreciate the time and effort you contributed with your participation today.

As you might imagine, the results of our study could be biased if new participants know what the study is about before they begin working on it. For this reason, PLEASE DO NOT SHARE ANY INFORMATION ABOUT THIS STUDY WITH ANYONE WHO MIGHT BE A PARTICIPANT IN THE FUTURE. We really appreciate your help with this!

Your thoughts and feelings are important to us, so if you have any questions about this research, you may contact the principal investigator, Timothy Carnevale, by email at SLGV@iup.edu, or the project supervisor, Dr. Anson Long, by email at anson.long@iup.edu or by phone at 724-357-4523.

If you feel like you may have an alcohol problem or would like to learn more about alcohol and its related consequences, please call IUP's office of Alcohol Tobacco and Other Drugs at 724-357-1265.

If you would like to learn more about research on I-sharing, social tuning, or alcohol, please see the following resources:

Borsari, B., & Carey, K. B. (2001). Peer influences on college drinking: A review of the research. *Journal of substance abuse*, *13*(4), 391-424.

Pinel, E. C., Long, A. E., Landau, M. J., Alexander, K., & Pyszczynski, T. (2006). Seeing I to I: a pathway to interpersonal connectedness. *Journal of personality and social psychology*, *90*(2), 243.

Sinclair, S., Lowery, B. S., Hardin, C. D., & Colangelo, A. (2005a). Social tuning of automatic racial attitudes: the role of affiliative motivation. *Journal of personality and social psychology*, *89*(4), 583.

Thank you very much for participating!