

2014

# The Efficacy of Interactive Journaling® in Reducing Alcohol Use and Alcohol-Related Problems among Mandated College Student Drinkers

Steven Lee Proctor

*Louisiana State University and Agricultural and Mechanical College*

Follow this and additional works at: [https://digitalcommons.lsu.edu/gradschool\\_dissertations](https://digitalcommons.lsu.edu/gradschool_dissertations)



Part of the [Psychology Commons](#)

---

## Recommended Citation

Proctor, Steven Lee, "The Efficacy of Interactive Journaling® in Reducing Alcohol Use and Alcohol-Related Problems among Mandated College Student Drinkers" (2014). *LSU Doctoral Dissertations*. 3142.  
[https://digitalcommons.lsu.edu/gradschool\\_dissertations/3142](https://digitalcommons.lsu.edu/gradschool_dissertations/3142)

This Dissertation is brought to you for free and open access by the Graduate School at LSU Digital Commons. It has been accepted for inclusion in LSU Doctoral Dissertations by an authorized graduate school editor of LSU Digital Commons. For more information, please contact [gradetd@lsu.edu](mailto:gradetd@lsu.edu).

THE EFFICACY OF INTERACTIVE JOURNALING® IN REDUCING ALCOHOL USE  
AND ALCOHOL-RELATED PROBLEMS AMONG MANDATED  
COLLEGE STUDENT DRINKERS

A Dissertation

Submitted to the Graduate Faculty of the  
Louisiana State University and  
Agricultural and Mechanical College  
in partial fulfillment of the  
requirements for the degree of  
Doctor of Philosophy

in

The Department of Psychology

by

Steven L. Proctor

B.S., Appalachian State University, 2007

M.A., Western Carolina University, 2009

December 2014

## TABLE OF CONTENTS

ABSTRACT.....	iv
CHAPTER	
1 INTRODUCTION .....	1
2 REVIEW OF THE LITERATURE .....	6
The Alcohol Skills Training Program.....	6
Brief Alcohol Screening and Intervention for College Students .....	9
Cognitive-Behavioral Skills Training.....	11
Perceived Drinking Norms .....	12
Motivational Interviewing .....	14
Alcohol Expectancies.....	15
CHOICES About Alcohol: A Brief Alcohol Abuse Prevention Program .....	16
Interactive Journaling® .....	19
Summary and Rationale.....	22
Evaluation of CHOICES Efficacy .....	25
Study Aim .....	25
3 MATERIALS AND METHODS.....	26
Participants.....	26
Measures .....	30
Demographics Questionnaire.....	30
Rutgers Alcohol Problem Index (RAPI).....	31
Daily Drinking Questionnaire (DDQ) .....	32
Brief Drinker Profile (BDP).....	33
Structured Clinical Interview for DSM-IV-TR Axis I Disorders, Patient Edition, Alcohol Use Disorders Module (SCID).....	34
Program Evaluation Questionnaire .....	34
Intervention .....	35
Procedure .....	37
Intervention Integrity .....	39
Outcomes .....	39
Data Analyses .....	40
Baseline Differences and Success of Randomization.....	40
Treatment Effects.....	40
4 RESULTS .....	42
Baseline Differences and Success of Randomization.....	42
Treatment Effects.....	43
Program Evaluation .....	44
5 DISCUSSION.....	46
Limitations .....	52

6 SUMMARY AND CONCLUSIONS .....	54
REFERENCES .....	56
APPENDIX	
A RUTGERS ALCOHOL PROBLEM INDEX.....	68
B DAILY DRINKING QUESTIONNAIRE .....	70
C PROGRAM EVALUATION QUESTIONNAIRE.....	71
D CONSENT FORM.....	72
E IRB APPROVAL.....	77
VITA.....	78

## ABSTRACT

Alcohol use and alcohol-related problems remain serious public health and safety concerns on United States college campuses. Considerable research has amassed to support the efficacy of the *Alcohol Skills Training Program (ASTP)*, most notably the *Brief Assessment and Screening Intervention for College Students*, in reducing alcohol use and alcohol-related problems among mandated and voluntary college student drinkers. The most recent outgrowth of the ASTP curriculum, *CHOICES About Alcohol: A Brief Alcohol Abuse Prevention Program*, is a self-guided, experiential writing process which utilizes Interactive Journaling®. The present study sought to evaluate the efficacy of CHOICES in reducing alcohol use and alcohol-related problems among high-risk college student drinkers. The total sample was comprised of 31 undergraduate college students (80.6% male) mandated by campus officials to complete a brief alcohol intervention due to violation of university policies on alcohol use. Ethnic composition was predominately Caucasian (96.8%), and nearly one-third (29.0%) of the sample indicated current membership in a fraternity or sorority. All students were classified as “high-risk” drinkers, defined as consumption of at least five drinks on at least one occasion during the past month, or endorsement of a minimum of three alcohol-related problem areas occurring on three to five occasions in the past three years. All students were administered a structured clinical interview and completed baseline assessment measures of their current substance use patterns. Eligible students were randomized and subsequently allocated to either: (a) the CHOICES condition ( $n = 16$ ), or (b) the assessment-only wait-list control condition ( $n = 15$ ). Students assigned to the CHOICES condition then participated in a single 90-minute individual session. One month after the baseline assessment, students in both conditions completed measures of alcohol use and alcohol-related problems. Contrary to prediction, students allocated to the

CHOICES condition did not fare better than students allocated to the assessment-only wait-list control condition on any of the six primary outcome variables. However, the reduction in peak blood alcohol concentration during a single drinking occasion in the past month was significantly larger for the control condition relative to the CHOICES condition. Given the preliminary nature of the reported findings, additional research is warranted.

## CHAPTER 1: INTRODUCTION

Alcohol use and alcohol use disorders (AUDs) are prevalent among college students. AUD prevalence rates from a large nationally representative sample of United States (U.S.) college students found that 30.5% of students met current *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition* (DSM-IV; American Psychiatric Association [APA], 1994) criteria for alcohol abuse and 6.4% met current criteria for alcohol dependence (Knight et al., 2002). Findings from the National Household Survey on Drug Abuse (NHSDA) revealed that nearly half of all college students drank five or more drinks on a single occasion in the past month (Hingson, Heeren, Winter, & Wechsler, 2005). Furthermore, according to recent estimates from the 2011 National Survey on Drug Use and Health (Substance Abuse and Mental Health Services Administration [SAMHSA], 2012), young adults aged 18 to 22 years enrolled full-time in college evinced higher rates of current alcohol use (i.e., consuming at least one drink in the past 30 days), binge use (i.e., five or more drinks on the same occasion on at least one day in the past 30 days), and heavy use (i.e., five or more drinks on the same occasion on each of five or more days in the past 30 days) relative to their non-college-attending peers.

College student drinking has also been associated with a variety of adverse outcomes, including injury, physical assault, sexual abuse, high-risk sexual behaviors, driving while impaired, vandalism, police involvement, poor academic performance, and mortality (Hingson, Heeren, Zakocs, Kopstein, & Wechsler, 2002; Hingson, Zha, & Weitzman, 2009). In fact, the rate of both alcohol-related motor vehicle crash deaths and unintentional non-traffic deaths among college students increased from 1998 to 2001 (Hingson et al., 2005). Also noteworthy was that approximately 1 in 10 college students were unintentionally injured because of drinking, and nearly as many had unprotected sexual intercourse as a result of their drinking (Hingson et

al., 2005). Problematic college student drinking has been found to contribute to reduced academic performance in that nearly one-fourth of students reported academic consequences related to their alcohol use such as missing class, falling behind, doing poorly on exams or assignments, and receiving lower grades overall (Engs, Diebold, & Hansen, 1996; Wechsler et al., 2002). Alcohol use and alcohol-related behaviors have also been identified as among the most common reasons for disciplinary infractions on college campuses (Barnett, Goldstein, Murphy, Colby, & Monti, 2006), and trends indicate an increase in the number of students mandated to attend alcohol programs for violation of university alcohol policies (i.e., 1.8% in 1993 to 3.5% in 2001; Wechsler et al., 2002).

Similar to the differences identified in alcohol use patterns among college students versus their non-college attending peers, college students have been found to be significantly more likely to drive under the influence of alcohol in the previous year (31.4% vs. 23.7%, respectively; Hingson et al., 2005). College students are also significantly more likely to meet diagnostic criteria for a DSM-IV AUD (i.e., abuse or dependence) than their non-college attending peers (Blanco et al., 2008; Slutske, 2005). For instance, college students are over 1.5 times more likely to meet criteria for alcohol abuse than persons of the same age who do not attend college (Slutske, 2005). Thus, not only is the use and misuse of alcohol relatively common among U.S. college students, but college students appear to be at an elevated risk for experiencing clinically significant alcohol-related problems compared to their same-age peers who do not attend college.

Despite the numerous adverse consequences associated with problematic alcohol use among college students—defined as heavy drinking or drinking that is accompanied by unpleasant consequences—some researchers argue that many students self-initiate change or



“mature out” of heavy drinking patterns both while attending college (Dearing, Witkiewitz, Connors, & Walitzer, 2013) and subsequent to graduation from college (Fillmore, 1988; Johnstone et al., 1996; O’Malley, 2005). In fact, among a sample of high-risk college student drinkers not seeking treatment, mean heavy drinking days (i.e., consuming 5/4 drinks per day for men/women) declined steadily over the two-year observational period from approximately 12 days per month to approximately 8 days per month (Dearing et al., 2013). Furthermore, mounting evidence suggests that as college students transition to adult roles following college graduation and begin to take on the responsibilities of adulthood (e.g., getting married, having children, adopting more conventional attitudes and outlooks), problematic alcohol use declines (Donovan, Jessor, & Jessor, 1983; Leonard & Rothbard, 1999; Merline, O’Malley, Schulenberg, Bachman, & Johnston, 2004). Thus, it is important to note that beyond the college-age years, only a fraction of high-risk college student drinkers will continue to experience problems that may preclude success in various life roles (Sher & Gotham, 1999).

College students mandated by campus officials to participate in treatment services due to violation of university policies on alcohol use (e.g., underage possession of alcohol, driving while intoxicated) appear to be at an especially increased risk for developing alcohol-related problems. Mandated college student drinkers have been found to report heavier drinking patterns, significantly lower grades, and more alcohol-related negative consequences relative to non-mandated college student drinkers (Barnett & Read, 2005; Fromme & Corbin, 2004). Moreover, there have been increases in both the number of alcohol policy violations committed by college students and the number of college students mandated to participate in alcohol treatment programs in recent years (Hoover, 2005; Porter 2006; Wechsler, Lee, Nelson, & Kuo,

2002). Therefore, it appears that mandated college student drinkers represent an ideal target for early alcohol intervention and prevention programming on U.S. college campuses.

In light of the persistent and pervasive problem of hazardous alcohol use and associated negative consequences present on U.S. college campuses, several strategies and alcohol control policies have been proposed to curtail college student drinking, including drinking and driving sanctions, alcohol outlet density and hours of operation regulations, minimum legal drinking age (MLDA) and underage compliance checks, taxation, and responsible service (Sussman, 2012). Theoretically, increased enforcement of MLDA laws should stymie the purchase of alcohol by minors, which in turn should impact alcohol consumption and alcohol-related problems. However, a review of the extant MLDA research literature found that among studies examining the effect of this strategy with college students specifically, none demonstrated a significant relationship between MLDA and alcohol consumption or alcohol-related problems (Wagenaar & Toomey, 2002). Research has also demonstrated that while underage compliance checks conducted by law enforcement agencies initially reduced the likelihood of illegal alcohol sales at both checked alcohol establishments and establishments that had a close neighbor checked in the past 90 days, the effects quickly decayed over time (Erickson, Smolenski, Toomey, Carlin, & Wagenaar, 2013).

Additional strategies involve increased price and excise taxes on alcohol as well as restrictions on alcohol retail outlet density. Prior work indicates that although increased price and excise taxes on alcohol may lead to significant reductions in both binge drinking and underage drinking among female college students, the drinking practices of male college students appear generally insensitive to the price of alcohol (Chaloupka & Wechsler, 1996). However, substantial increases in taxes are necessary if modest (i.e., clinically significant) reductions in

binge drinking among female students are desired. In contrast to the disparate findings regarding the effect of price on alcohol consumption, alcohol availability appears to have a strong impact on a variety of indicators of problematic alcohol use for both male and female college students. That is, higher levels of college student drinking and binge drinking have been observed as the number of businesses licensed to sell alcohol within one mile of campus increased (Chaloupka & Wechsler, 1996).

Although there is evidence supporting the effectiveness of certain alcohol control strategies and policies designed to reduce high-risk drinking behaviors among college students, a comprehensive discussion and evaluation of such initiatives is beyond the scope of the present investigation. It is also important to note that some alcohol control strategies and policies are *universal* prevention approaches, in which the population versus select subgroups of high-risk college student drinkers is targeted. The intention of a universal approach to prevention is to produce incremental change throughout the population, as opposed to “wholesale change” among those students whose behavior is the most extreme with respect to alcohol consumption and alcohol-related problems (Weitzman & Nelson, 2004). *Indicated* prevention interventions target students identified as having minimal but detectable signs of problematic alcohol use, and focus on the immediate risk factors present in the environment surrounding students (O’Connell, 2009). An example of an indicated approach designed to curb college student drinking includes wider implementation of early identification and brief alcohol intervention programs in student judicial and health service settings. The sections to follow will describe the specific content and review the evidence for the *Alcohol Skills Training Program* (ASTP; Fromme, Marlatt, Baer, & Kivlahan, 1994; Miller, Kilmer, Kim, Weingardt, & Marlatt, 2001) in general, as well as subsequent formats based on the ASTP curriculum in particular.

## **CHAPTER 2: REVIEW OF THE LITERATURE**

### **The Alcohol Skills Training Program**

At its core, the ASTP is modeled after the strategies for relapse prevention, as described elsewhere (Marlatt & Gordon, 1985), and was designed as a cognitive-behavioral approach to the secondary prevention of alcohol problems. Based on the social learning perspective (Akers, Krohn, Lanza-Kaduce, & Radosevich, 1979; Bandura, 1977), which posits that high-risk alcohol use (e.g., drinking heavily at a fraternity or sorority party) may be the result of skills or knowledge deficits, a primary aim of the ASTP is to equip students with the necessary information and coping skills to drink moderately and facilitate safer alcohol use (Fromme et al., 1994). The intended audience for the ASTP includes college students who drink heavily and have experienced, or are at increased risk for developing, alcohol-related problems. The ASTP follows a harm reduction approach, in which the ultimate goal is not necessarily to achieve total abstinence, but rather to facilitate significant reductions in high-risk alcohol use and alcohol-related problems. Thus, the ASTP appears suitable for college students who meet DSM-IV criteria for alcohol abuse or “mild” alcohol dependence. The ASTP curriculum incorporates basic factual information about the effects of alcohol, individual drinking cues and high-risk situations related to negative affective states, alcohol refusal skills, alcohol expectancies, self-monitoring of daily alcohol use, and strategies for stress management and maintenance of behavior change (Fromme et al., 1994). Originally delivered in group format over the course of eight weekly, 90-minute sessions (Kivlahan, Coppel, Fromme, Miller, & Marlatt, 1990), the ASTP may also be offered in the context of six weekly group sessions (Baer et al., 1992).

The efficacy of the ASTP as a secondary prevention approach for alcohol problems has been evaluated in three independent randomized trials. The first study evaluated the 8-week

ASTP curriculum using a sample of young adults, primarily college students, recruited from the community over a 12-month observational period (Kivlahan et al., 1990). Participants were randomly assigned to one of three experimental conditions: (a) the ASTP, (b) an alcohol information-based program which utilized a strictly didactic approach, or (c) an assessment-only control group. All participants completed baseline assessments and daily monitoring of their alcohol consumption throughout the duration of the 8-week intervention phase and for one week at each follow-up assessment (i.e., at 4, 8, and 12 months). Over the 12-month follow-up period, a significant reduction in self-reported alcohol consumption was found for the total sample. A trend was noted, however, which reflected greater improvement on all drinking measures (e.g., drinks per week, peak blood alcohol concentration [BAC], driving after drinking four or more drinks) for participants assigned to the ASTP compared to the alcohol information class and assessment-only control group. In light of the relatively small sample size (i.e.,  $N = 36$ ) and resulting modest statistical power, the reported pattern of overall risk reduction suggests that the ASTP shows promise as a skills-based approach to the secondary prevention of alcohol problems among young adults.

The second study evaluated the ASTP administered in three separate formats: (a) a 6-week classroom group, (b) a 6-unit self-help manual with matched educational content, and (c) a single 1-hour individualized feedback and advice session (Baer et al., 1992). All participants completed baseline assessments and daily monitoring of their alcohol consumption throughout the duration of the 6-week intervention phase and for one week at each follow-up assessment (i.e., at 3-, 6-, 12-, and 24-month intervals). Findings replicated and extended those of Kivlahan et al. (1990) in that reductions in self-monitored drinking rates and retrospective drinks per month were generally maintained over the 2-year follow-up period for all three ASTP modalities.

However, only those participants who completed a minimum of five of the six units included in the self-help manual (i.e., 11 of 30 participants) reported lower levels of drinking throughout the observational period. In addition to the high attrition rate for the self-help condition, the manual was rated lowest in all program evaluation categories (e.g., how likely the participant would be to recommend the program to others, how helpful the program was in changing drinking behavior) relative to the 6-week group and single session ASTP formats.

Finally, the third evaluation of the ASTP curriculum sought to replicate and extend prior work regarding the efficacy of a brief intervention designed to reduce harmful consequences associated with alcohol consumption by high-risk college student drinkers (Marlatt et al., 1998). The ASTP intervention was again reduced, and consisted of an individualized feedback session following an assessment session to determine the extent of students' alcohol use and alcohol-related problems. The study sample was comprised of incoming college freshmen who were screened in their senior year of high school for participation in a 4-year longitudinal study of alcohol use and other lifestyle behaviors. Students who reported a pattern of heavy alcohol consumption at screening or a history of alcohol-related problems were enrolled in the randomized controlled trial and received either: (a) the assessment procedure only, or (b) the assessment procedure in addition to a single individualized feedback session. At the 1- and 2-year follow-up assessments, students who received the individualized brief motivational intervention reported significantly greater reductions in their alcohol use and alcohol-related problems, as well as fewer symptoms of alcohol dependence relative to students assigned to the high-risk control condition. These findings were later found to be sustained at the 4-year follow-up (Baer, Kivlahan, Blume, McKnight, & Marlatt, 2001).

## **Brief Alcohol Screening and Intervention for College Students**

The *Brief Alcohol Screening and Intervention for College Students* (BASICS; Dimeff, Baer, Kivlahan, & Marlatt, 1999), another format of the ASTP, was designed as a brief intervention for alcohol problems among college students. BASICS was first implemented in 1992, and as of 2008, has been used in approximately 1,100 sites and has reached nearly 20,000 college students (SAMHSA, 2008). BASICS consists of two 50-minute sessions with a brief assessment of alcohol use and various alcohol-related problems during the first session. Information gathered during the initial session includes alcohol consumption patterns (i.e., typical drinking pattern and atypical or episodic drinking occasions for the past 30 days), perceived drinking norms, family and personal history of substance use problems, alcohol outcome expectancies, symptoms of alcohol dependence, as well as personal beliefs about alcohol. The objectives of the initial assessment interview include gathering relevant information regarding the students' alcohol use and related high-risk health behaviors (e.g., risky sexual practices), as well as identifying students who may be moderately to severely alcohol dependent and/or those students who present with health conditions where any use of alcohol may be medically contraindicated (e.g., possible pregnancy, ulcers). At the completion of the initial session, students are asked to monitor their drinking on a daily basis for approximately two weeks in an effort to increase self-awareness and provide useful data for the second session (Dimeff et al., 1999).

The second session is tailored to the students' individual needs and provides the student with personalized feedback regarding their pattern of alcohol use and the related risks associated with their alcohol use. The second session is also used to debunk common myths regarding alcohol use (e.g., "If some alcohol is good, more must be better.") and increase the students'

knowledge base of accurate information about alcohol's effects, as well as increase the students' motivation to change their reported drinking behaviors. Typically, more feedback is provided during the first portion of the interview, while advice-giving and making plans beyond BASICS are emphasized toward the end of the interview (Dimeff et al., 1999).

BASICS is included in SAMHSA's National Registry of Evidence-based Programs and Practices (NREPP; SAMHSA, 2008), a searchable online database of mental health and substance use interventions, and has been classified as an effective Tier I alcohol intervention for high-risk college student drinkers (National Institute on Alcohol Abuse and Alcoholism [NIAAA], 2002). NREPP provides Quality of Research ratings for all included interventions, which are indicators of the strength of the evidence supporting the outcomes of the intervention, with higher scores indicative of more compelling evidence. Each outcome is rated separately given interventions may target multiple outcomes (e.g., quantity of alcohol use, alcohol-related problems). NREPP utilizes six specific standardized criteria to rate interventions and the evidence supporting their outcomes. Criteria used for evaluating the intervention's Quality of Research include the reliability of the measures, validity of the measures, intervention fidelity, missing data and attrition, potential confounding variables, and appropriateness of analysis. Reviewers assign a rating based on a scale ranging from 0.0 to 4.0, with 4.0 being the highest rating given. Quality of Research ratings for BASICS ranged from 3.1 to 3.3 based on the outcome of interest, with studies investigating the effect of BASICS on alcohol-related problems demonstrating the strongest evidence. NREPP's Readiness for Dissemination rating, on the other hand, summarizes the amount and general quality of the resources available to support the use of the intervention. The Readiness for Dissemination rating applies to the intervention as a whole, and is based on the same scale as that used for Quality of Research ratings (i.e., from 0.0 to 4.0).



The three criteria used for evaluating the intervention's Readiness for Dissemination include the availability of implementation materials, training and support resources, and quality assurance procedures. The Readiness for Dissemination rating for BASICS was 3.9.

According to the NIAAA-supported Task Force on College Drinking (2002), the Tier I designation is the highest that an intervention can receive and requires "evidence of effectiveness among college student populations." The NIAAA Task Force's recommendations were organized in four tiers based on both the interventions' relevance to college student drinking and the degree to which they are supported by empirical evidence—broadly defined as "two or more favorable empirical studies." The Tier I category includes the following three strategies: (a) combining cognitive-behavioral skills with norms clarification and motivational enhancement interventions, (b) offering brief motivational enhancement interventions, and (c) challenging alcohol expectancies (NIAAA, 2002). The following sections will now review the various Tier I alcohol intervention strategies outlined by NIAAA as they pertain to BASICS.

**Cognitive-Behavioral Skills Training.** BASICS incorporates cognitive-behavioral skills training. Cognitive-behavioral skills training attempts to alter or change students' maladaptive beliefs regarding their use of alcohol through various techniques, including addressing expectancies about alcohol's effects, monitoring alcohol use, and learning appropriate coping skills to manage negative affect or stress (NIAAA, 2002). This is in contrast, however, to the services offered on many college campuses for students in violation of university policies on alcohol use, in which alcohol education classes are typically provided with the goal of educating students about the consequences of heavy alcohol consumption (Sadler & Scott, 1993). Several reviews of the vast treatment literature for high-risk college student drinkers (Larimer & Cronce, 2002, 2007; Walters & Bennett, 2000) have concluded that a strictly didactic approach to

prevention yielded modest decreases in student problem drinking and that overall, information-based interventions were not as effective as skills or attitudinal-based interventions in decreasing student drinking. College students mandated to complete a brief motivational intervention have also been found to experience favorable outcomes in terms of fewer alcohol-related problems at 6-month follow-up relative to students who completed an alcohol education class (Borsari & Carey, 2005). Therefore, it appears that simply teaching students about the dangers or harmful consequences of drinking in a general way is insufficient for achieving optimal behavior change.

BASICS, on the other hand, is based on a model that combines capability deficits, as well as developmental and motivational aspects (Dimeff et al., 1999). That is, the BASICS model assumes that: (a) many students lack important information and coping skills to drink moderately, (b) certain developmental milestones (e.g., being away from home for the first time and the assumption of adult roles) contribute to heavy drinking, and (c) both personal and environmental factors (e.g., social pressure, cultural mindset regarding drinking) inhibit the use of behavioral skills that students may already have at their disposal (Dimeff et al., 1999). Research comparing BASICS to an alcohol educational intervention found that heavier drinkers (i.e., upper 50%) assigned to BASICS significantly reduced drinks per week and frequency of heavy episodic drinking compared to students in the educational intervention group (Murphy et al., 2001). Thus, providing personalized individual drinking feedback in line with the specific needs of a student appears more effective than standardized alcohol classes with solely educational content.

**Perceived Drinking Norms.** Norms clarification is an integral component of BASICS. Perceived drinking norms refer to the normative beliefs that students hold in regard to a particular reference group's (e.g., typical college students, members of a fraternity or sorority,

intercollegiate athletes, college freshmen) drinking behaviors. Perceived drinking norms include both descriptive norms (i.e., perceived prevalence of peer alcohol use) and injunctive norms (i.e., perceived peer approval of drinking behaviors). In regard to descriptive norms, college students tend to overestimate the frequency and quantity of their peer's alcohol consumption (Lewis & Neighbors, 2004; Perkins, Meilman, Leichliter, Cashin, & Presley, 1999), which in turn, may reinforce or promote students' own alcohol use behaviors. In fact, students who reported drinking more frequently have been found to perceive that typical college students also drank alcohol more frequently than students who reported drinking less often (Martens et al., 2006). Perceived descriptive norms have also been found to be related to negative alcohol-related consequences (Benton et al., 2006; Neighbors, Lee, Lewis, Fossos, & Larimer, 2007; Wood, Capone, Laforge, Erickson, & Brand, 2007). Similar to descriptive norms, associations between injunctive norms and college students' own quantity of alcohol use and negative alcohol-related consequences have also been reported (Neighbors et al., 2008; Larimer, Turner, Mallett, & Geisner, 2004).

BASICS addresses the issue of perceived drinking norms by first reviewing the student's typical pattern of drinking as well as the student's perceived norms for college drinking. The student's reported perceptions of college student drinking norms are then compared to the actual norms observed for that student's university; typically, normative data may be derived from previous research conducted at the university at which the student attends. Another important source of data relating to the student's consumption patterns comes from the self-monitoring cards that students are asked to complete following the first session. The student's self-monitoring drinking data are then framed in terms of BAC levels and subsequently compared to other common markers, including the state's legal limit for driving under the influence of alcohol

and actual college norms. Thus, the primary aim of individualized feedback regarding college student norms is to place the student's drinking within a broader context of college student drinking habits in an effort to provide both a basis for comparison and to raise the student's awareness of the actual drinking patterns of his or her peers (Dimeff et al., 1999). Extensive research has documented that brief motivational interventions, such as BASICS, that include personalized normative feedback tend to result in decreases in perceived norms for drinking and negative alcohol-related consequences (for review see Larimer & Cronce, 2007; Wood et al., 2007).

**Motivational Interviewing.** Motivational Interviewing (MI), a component of BASICS, is a style of communication that operates on the premise that individuals are best suited to achieve change when motivation comes from within themselves, rather than being imposed by the clinician (Miller & Rollnick, 1991). MI, as it applies to BASICS, is a directive, non-confrontational, therapeutic approach whereby students are led through the process of assessing their current situation and determining what strategies might be employed to assist in identifying and achieving behavior change related to their problematic drinking (Miller & Rollnick, 1991). MI encompasses elements from the stages of change theory and client-centered approaches (Miller, Zweben, DiClemente, & Rychtarik, 1995; Prochaska & Velicer, 1997), which provides normative-based feedback and explores student motivation to change in light of the feedback. MI was developed to facilitate change along a continuum, and to assist individuals in building self-efficacy and eliciting "change talk" through the use of various techniques. In other words, an overarching objective of BASICS is to help students resolve their ambivalence regarding changing addictive or high-risk behavior. Finally, consistent with the perspective of a harm

reduction approach, from which BASICS follows, MI views any step in the direction of achieving a positive behavior change as a favorable outcome (Rollnick, Heather, & Bell, 1992).

**Alcohol Expectancies.** A student's expectations regarding the anticipated reinforcing and punishing consequences of drinking, based on prior experience with alcohol, may influence decisions whether or not to drink. Examination of alcohol expectancies is an important area to address among college student drinkers in the context of brief motivational interventions for college student drinking. Assessment of alcohol expectancies is also important in determining a student's reasons for drinking in certain environments in that it may provide for a useful target in interventions designed to reduce heavy drinking in college student populations (Darkes & Goldman, 1993).

BASICS addresses alcohol expectancies by encouraging students to examine their beliefs regarding what they expect to experience or feel when they consume alcohol. Not surprisingly, a student's belief that alcohol contributes to improved social functioning (e.g., feeling relaxed, socially outgoing, sexually attractive) often provides the incentive to drink. In addition, many college student drinkers hold the belief that "more is better" in that the pleasure they derive from drinking is thought to be proportionate to the amount they consume. BASICS attempts to debunk this myth by reviewing the self-monitoring cards and discussing the findings from laboratory research using the balanced placebo design (Marlatt, Demming, & Reid, 1973) and the potential for "placebo effects," as discussed elsewhere (for reviews see George, Gilmore, & Stappenbeck, 2012; Hull & Bond, 1986). Research has found that BASICS and similar brief motivational interventions which address students' expectations regarding drinking tend to result in decreases in positive alcohol expectancies and various drinking outcomes (Larimer & Cronce, 2007).

## **CHOICES About Alcohol: A Brief Alcohol Abuse Prevention Program**

*CHOICES About Alcohol: A Brief Alcohol Abuse Prevention Program* (Marlatt & Parks, 2010), or just simply CHOICES, is the most recent outgrowth of the ASTP, and may be used for all three levels of problematic alcohol use prevention for college students (i.e., indicated, universal, and selective; Parks & Woodford, 2005). That is, CHOICES may be used as an indicated prevention program, similar to BASICS, for college students who have already developed alcohol-related problems (e.g., mandated college student drinkers in violation of university policies on alcohol use), a universal prevention program directed at the entire campus community, or a selective prevention program targeted at specific high-risk subgroups of students (e.g., freshmen, intercollegiate athletes, members of the Greek community). CHOICES may be administered in either individual or group format and the recommended timeframe for implementation is two 45-minute sessions or one 90-minute session, which largely depends on the specific implementation strategy employed by a particular college campus; although the modal number and duration of sessions is one 90-minute session (G. Parks, personal communication, September 19, 2012).

Similar to the other available ASTP modalities (e.g., BASICS), CHOICES applies comparable core content and philosophy in that the CHOICES content is framed within a broader context of healthy lifestyle behaviors. The primary goals of CHOICES include presenting students with accurate factual information related to alcohol use and related health risks, informing students of their relative risk of exposure to harm, and providing students with a menu of cognitive-behavioral coping strategies that will encourage them, through a self-reflective process, to achieve a positive behavior change (Parks & Woodford, 2005). It is important to note that although the two brief interventions based on the ASTP (i.e., BASICS and CHOICES)

incorporate core curriculum of basic alcohol information, cognitive-behavioral skills training, and motivational interviewing techniques (Parks & Woodford, 2005), the two interventions are quite distinct. With respect to important differences in terms of content, CHOICES does not include thorough coverage of alcohol expectancies or a discussion of the findings from the balanced placebo design (George, Gilmore, & Stappenbeck, 2012; Marlatt et al., 1973), nor does CHOICES include the recommended 2-week period of self-monitoring of alcohol use that is central to the implementation of BASICS (Dimeff et al., 1999). The absence of self-monitoring, in and of itself, is an important distinction given self-monitoring alone has been shown to impact alcohol use and related outcomes among college students (Garvin, Alcorn, & Faulkner, 1990; Sobell & Sobell, 1973). Regarding delivery, CHOICES—as it will be examined in the context of the present study—consists of a single 90-minute session, whereas BASICS is intended to be delivered over the course of two 50-minute sessions. In addition, perhaps the most obvious distinction between BASICS and CHOICES is that the CHOICES program utilizes a self-guided process known as Interactive Journaling®, which is absent from BASICS. Thus, the overarching objective of the present study is evaluate the efficacy of CHOICES relative to an assessment-only wait-list control group in reducing a number of variables of interest (e.g., alcohol use, alcohol-related problems) to college student drinkers, student judicial and health service settings, as well as university administrators. That is, the present study may best be considered an important first step in establishing the efficacy of CHOICES. Future research evaluating the efficacy of CHOICES relative to BASICS, although important and represent a logical next step, is beyond the scope of the present investigation.

Although considerable research supports the efficacy of BASICS in reducing alcohol use and alcohol-related problems among college student drinkers, limited research exists regarding

the impact of CHOICES on college student drinking outcomes. To date, there appears to be only a single study which utilized a randomized clinical trial to test the effects of CHOICES and two additional feedback-based alcohol interventions on alcohol use and alcohol-related problems among a sample of 173 mandated college student drinkers (Alfonso, Hall, & Dunn, 2013). Students were referred for services due to alcohol-related violations and allocated to one of three active treatment conditions: (a) BASICS delivered in two 50-minute individual sessions, (b) CHOICES delivered in a single 120-minute group session, or (c) an electronically-delivered individual feedback intervention. The inclusionary criteria for study participation were intentionally broad in that the range of student drinking habits reported at baseline included all drinking levels, and not solely those classified as “heavy drinking.” All students completed baseline measures of alcohol use and alcohol-related problems, and were followed for 3 months. At the 3-month follow-up, significant reductions in alcohol use and alcohol-related problems were found for students in the BASICS condition, and significant reductions in alcohol-related problems were found for students in the electronic feedback condition. No significant findings were found for students in the CHOICES condition on any of the drinking outcome measures. However, given CHOICES was delivered in group format and the sample was expanded to include all students referred for alcohol-related violations, irrespective of alcohol use and alcohol-related problems severity, it remains unclear if more favorable findings would have been observed had “high-risk” students received CHOICES individually. In addition, the normalization of deviant behavior due to the group format of CHOICES may have contributed to the observed findings. Thus, additional research evaluating the efficacy of CHOICES in reducing alcohol use and related harms among high-risk college student drinkers, when delivered in individual format, is warranted.



## **Interactive Journaling®**

The delivery vehicle of CHOICES, and the core information of the ASTP, is a structured and experiential writing process known as *Interactive Journaling®*, which guides and motivates individuals toward positive life change. Similar to BASICS, Interactive Journaling® is included in SAMHSA’s National Registry of Evidence-based Programs and Practices (SAMHSA, 2014), and received a high Readiness for Dissemination rating (i.e., 4.0 on a 4.0 scale). Unlike BASICS, however, Interactive Journaling® received a rather low Quality of Research rating (i.e., 2.5 on a 4.0 scale). Interactive Journaling®, or “expressive writing,” has been shown to be a valuable component of many effective learning strategy methods and can have beneficial psychological and physical health effects (Ames et al., 2008; Baikie et al., 2006; Deaver & McAuliffe, 2009; Epp, 2008; Frattaroli, 2006; Harvey & Farrell, 2003; Pachankis & Goldfried, 2010; Staulcup & Barth, 1984; Stone, 1998; Zyromski, 2007). Interactive Journaling® encompasses elements from the Transtheoretical Model of Change (TMC; Prochaska & Velicer, 1997) and Motivational Enhancement Therapy (MET; Miller, 1995). The TMC postulates that change occurs in a pattern beginning with precontemplation and progresses through contemplation, preparation, action, maintenance, and finally termination. MET is a non-confrontational approach whereby individuals are led through the process of assessing their current situation and determining what strategies might be employed to assist them in identifying and achieving change goals. Interactive Journaling® builds on this foundation through guided questioning and restructuring strategies designed to aid individuals in examining the emotions and cognitions surrounding maladaptive behaviors via Interactive Journaling® booklets. Thus, an MET approach appears quite appropriate and may facilitate an individual’s progression through the various stages of change included in the TMC.

The combination of emotional and cognitive expression utilized in Interactive Journaling® has been shown to be more effective than cognitive processing alone in regard to behavior change (Frattaroli, 2006). Previous research also suggests that self-help materials can be as effective as group or individual treatment for alcohol problems (Heather, Whitton, & Robertson, 1986; Miller & Taylor, 1980), and increased levels of defensiveness have been found to have a significant moderating effect on ASTP outcome for peak drinking consumed on a peak occasion at follow-up among mandated students (Palmer, Kilmer, Ball, & Larimer, 2010). Together, these findings suggest that Interactive Journaling® may be a particularly appealing brief intervention for use with mandated high-risk college student drinkers given its non-confrontational, non-judgmental approach and most importantly, the fact that it is time efficient. The CHOICES Interactive Journaling® booklet utilized in the present study is described in greater detail in the method section.

Preliminary support for the use of Interactive Journaling® can be gleaned from the findings from a randomized controlled trial of 183 male inmates incarcerated in a county jail facility (Proctor, Hoffmann, & Allison, 2012). All inmates met DSM-IV-TR (APA, 2000) criteria for substance dependence, had their current offense indicate substance involvement (i.e., were under the influence at the time of offense and/or committed the offense for which they were currently incarcerated to obtain or get money for substances), and had a minimum of one previous arrest in the 12 months prior to incarceration. Inmates were allocated to either an Interactive Journaling® group or a control group in which they received a federal brochure on addictions and offending as a placebo. Results revealed that inmates assigned to the Interactive Journaling® condition, as contrasted to the control condition, had a significantly lower criminal recidivism rate during the 12-month observational period following their release (51% vs. 66%,

respectively). Thus, Interactive Journaling® appears to show promise as a brief treatment intervention strategy for substance-dependent county jail inmates and may have the potential for reducing criminal recidivism.

Additional research investigating the effectiveness of Interactive Journaling® includes a randomized clinical trial of female offenders from four drug court programs (Messina, Calhoun, & Warda, 2012). A total of 150 women presenting for mandated drug court treatment were randomly assigned to either a standard outpatient mixed-gender treatment-as-usual program or a gender-responsive program; however, only 94 women completed the 18-month follow-up assessment. The gender-responsive treatment program focused on addiction and trauma, and included Interactive Journaling® curricula designed specifically for women offenders (Covington, 2002). Comparisons between the two groups indicated that offenders assigned to the Interactive Journaling® condition evinced better in-treatment performance (e.g., less likely to be remanded to jail or terminated from treatment for unsatisfactory progress, fewer disciplinary sanctions in response to misconduct as treatment progressed) and more positive treatment perceptions relative to the treatment-as-usual group. Furthermore, both groups experienced significant reductions in post-treatment drug use and criminal recidivism, and demonstrated improvement in their self-reported psychological well-being and self-efficacy through the 18-month observational period.

The use of Interactive Journaling® has also been found effective in reducing the likelihood of engaging in serious forms of misconduct during incarceration among Federal prison inmates (Camp, Daggett, Kwon, & Klein-Saffran, 2008) and in lowering the recidivism rate for driving under the influence among first-time DUI offenders relative to offenders who did not participate in the Interactive Journaling® curriculum (13.5% vs. 18.5%, respectively;

Loudenburg, 2008). Thus, preliminary evidence from experimental and quasi-experimental evaluations supports a link between Interactive Journaling® and behavior change among a variety of populations (e.g., county jail inmates, DUI offenders). However, there remains limited research regarding the efficacy of this particular approach in reducing alcohol use and alcohol-related problems among mandated college student populations, which suggests the need for further work.

### **Summary and Rationale**

In sum, alcohol use and alcohol-related problems remain serious public health and safety concerns on U.S. college campuses (e.g., Hingson et al., 2005, 2009; Knight et al., 2002). Trends also indicate a large increase in the number of students mandated to participate in alcohol programs due to violation of university alcohol policies (Wechsler et al., 2002). Considerable evidence in the form of randomized controlled trials, meta-analyses, and systematic reviews support the efficacy of brief motivational interventions, most notably BASICS, in reducing alcohol use and alcohol-related problems among both mandated and voluntary high-risk college student drinkers (e.g., DiFulvio, Linowski, Mazziotti, & Puleo, 2012; Fachini, Aliane, Martinez, & Furtado, 2012; Larimer & Cronce, 2002, 2007; Marlatt et al., 1998; Terlecki, Larimer, & Copeland, 2010). There remains considerably less information, however, available on the efficacy of CHOICES, a self-guided, experiential writing process based on the ASTP curriculum. In fact, the only investigation to date, which examined the effect of CHOICES delivered in group format on reductions in alcohol use and alcohol-related harms, revealed that no significant findings were noted on any of the outcome measures (Alfonso et al., 2012). Potential reasons for unfavorable findings included the context in which CHOICES was delivered (i.e., group format), as well as the sample composition in that all students mandated to complete the brief alcohol

intervention were recruited for study participation, irrespective of alcohol use severity. The present study sought to expand the research literature regarding the efficacy of CHOICES via the decision to examine the effect of CHOICES delivered in a single individual session, as well as the use of a high-risk college student sample.

Previous research evaluating a similar self-help manual format based on the ASTP content in the treatment of high-risk young adult drinkers (i.e., defined as at least one alcohol-related problem on the Michigan Alcoholism Screening Test [MAST; Selzer, 1971] and a minimum of two days of drinking per average week with BACs of .100 or higher) demonstrated unfavorable findings (Baer et al., 1992). However, the finding that significant reductions in drinking were found at 2-year follow-up for those participants who completed over 80% of the manual, suggests the potential for this format to impact various drinking outcomes. Possible reasons for unfavorable findings, as discussed by Parks and Woodford (2005), include most notably, the length of the workbook as each reading unit averaged 17 pages, which also included exercises to elaborate program points (e.g., an expectancy questionnaire, assertiveness and drink refusal skills) as well as weekly homework assignments. In addition, implementation of the self-help manual evaluated by Baer et al. did not include the use of a trained facilitator. That is, participants were provided with the self-help manual and were essentially left to make what they could of the experience on their own. Unlike the self-help manual evaluated by Baer et al., which required considerable self-initiative and motivation on the student's part to complete, the CHOICES Interactive Journal was designed to be completed by the student with the assistance of a professional trained in the delivery of Interactive Journaling® with experience in the treatment of problematic alcohol use among college students.

Finally, despite generally positive preliminary findings regarding the effectiveness of Interactive Journaling® (e.g., Proctor et al., 2012) and the high Readiness for Dissemination rating by NREPP (i.e., 4.0 on a 4.0 scale), the rather low Quality of Research rating (i.e., 2.5 on a 4.0 scale) represents a major area of concern. Ample resources available to support the use of an intervention in the absence of strong empirical evidence to support the outcomes of an intervention create an important issue relevant from not only a clinical standpoint, but an economical one as well. That is, an intervention's readiness for dissemination is necessary but not sufficient to support its use by treatment programs as an accepted, empirically-supported intervention. Therefore, additional, high-quality work is warranted to ensure the public is adequately educated about the available empirically-supported programs and practices, such as the CHOICES Interactive Journaling® program. Such work would help college administrators and researchers determine whether CHOICES best meets their needs and assist them in selecting the most promising approach to address the pervasive problem of college student drinking. The delivery of an intervention based on limited or weak evidence to support its use is also particularly salient given the provision of such services may be considered a misuse of already scarce resources for college student health care and counseling center settings. The present study design extends prior work regarding the effect of Interactive Journaling®, in which a number of NREPP Quality of Research areas received low ratings (i.e., reliability and validity of measures, intervention fidelity, and confounding variables), through the use of measures with demonstrated psychometric properties, adequate interventionist training, and adjustment for baseline differences.

## **Evaluation of CHOICES Efficacy**

**Study Aim.** The present study sought to evaluate the efficacy of CHOICES, delivered in the context of a single individual session, in reducing alcohol use and alcohol-related problems among high-risk mandated college student drinkers. Based on prior findings from ASTP outcomes research (Fachini et al., 2012; Larimer & Crouce, 2002, 2007; Marlatt et al., 1998), it is hypothesized that students assigned to the CHOICES condition will experience significantly larger mean reductions at the 1-month follow-up in terms of number of drinks consumed per typical week, number of drinking days per typical week, binge-drinking episodes, alcohol-related problems, as well as typical weekly BAC and peak BAC on a single drinking occasion in the past 30 days relative to the assessment-only wait-list control group.

## CHAPTER 3: MATERIALS AND METHODS

### Participants

Participants were recruited for study participation over the course of four academic semesters following referral to the Louisiana State University (LSU) Psychological Services Center by the LSU Student Advocacy and Accountability Office (SAA) for completion of a brief motivational intervention for alcohol use. Based on prior research (Baer et al., 2001; Marlatt et al., 1998), the study sample was comprised of high-risk college student drinkers, defined as: drinking on at least one occasion in the past month and consuming 5 to 6 drinks on at least one occasion as measured by the Daily Drinking Questionnaire (DDQ; Collins, Parks, & Marlatt, 1985; Kruse, Corbin, & Fromme, 2005), or endorsement of a minimum of three alcohol-related problem areas occurring on three to five occasions in the past three years on the Rutgers Alcohol Problem Index (RAPI; White & Labouvie, 1989).

A total of 61 undergraduate students were initially identified for study inclusion during the data collection period. All students were formally charged with one or more alcohol-related violation occurring on or off campus under the LSU Code of Student Conduct, found responsible for committing the alleged misconduct offense via administrative decision by an SAA Official, the Code of Student Conduct Committee, or the University Hearing Panel, and subsequently mandated to complete a brief alcohol intervention. However, 26 students did not report sufficient levels of alcohol consumption or alcohol-related problems (i.e., were not classified as high-risk drinkers) and were, therefore, excluded from study participation. In addition, one student was excluded due to endorsement of current suicidal ideation and severe indications of alcohol dependence as per the AUD module of the Structured Clinical Interview for DSM-IV-TR Axis I Disorders, Patient Edition (SCID; First, Spitzer, Gibbon, & Williams, 2002). Finally, one student



was excluded due to failing to meet the minimum age requirement for study inclusion at the baseline assessment, and two students did not complete the 1-month follow-up assessment given they withdrew from classes at LSU following completion of the baseline assessment appointment; which resulted in a net sample of 31 students. All study procedures were reviewed and approved by the LSU Institutional Review Board.

Baseline demographic characteristics for the two study conditions are detailed in Table 1. The total sample was comprised of 31 high-risk college student drinkers (80.6% male) with an average age of 19.81 years ( $SD = 1.25$ ) and a range of 18 to 22 years. Ethnic composition was predominately Caucasian (96.8%), and nearly one-third (29.0%) of the sample indicated that they were currently a member of a fraternity or sorority. The majority of students lived off campus (71.0%), while 19.4% lived in on-campus housing (i.e., dormitory or residence hall). Nearly one-quarter (22.6%) of the sample was comprised of freshmen. A breakdown of the remaining academic class year categories is as follows: sophomore, 25.8%; junior, 25.8%; senior, 12.9%; and fifth-year senior or above, 12.9%. Over half (54.8%) of the students were employed part-time, and 45.2% were unemployed at the time of the baseline assessment. Slightly more than half (51.6%) of students reported that the highest level of education attained by their mother was a bachelor's degree, followed by a high school diploma or GED (29.0%). Regarding the highest level of education attained by their father, 38.7% of students reported a bachelor's degree, 25.8% reported a high school diploma or GED, and 22.8% reported a master's degree.

Table 1. Demographic and Clinical Characteristics at Baseline, Stratified by Study Condition

Variable	Overall <i>N</i> = 31 % ( <i>n</i> )	Study Condition	
		CHOICES <i>N</i> = 16 % ( <i>n</i> )	Control <i>N</i> = 15 % ( <i>n</i> )
Age <sup><i>M</i>(<i>SD</i>)</sup> (years)	19.8 (1.24)	20.0 (1.46)	19.6 (0.99)
Gender			
Male	80.6 (25)	81.3 (13)	80.0 (12)
Female	19.4 (6)	18.8 (3)	18.8 (3)
Ethnicity			
Caucasian	96.8 (30)	93.8 (15)	100 (15)
Hispanic/Latino	3.2 (1)	6.3 (1)	0.0
Employment Status			
Employed	54.8 (17)	43.8 (7)	66.7 (10)
Unemployed	45.2 (14)	56.2 (9)	33.3 (5)
Academic Class Year			
Freshman	22.6 (7)	25.0 (4)	20.0 (3)
Sophomore	25.8 (8)	18.8 (3)	33.3 (5)
Junior	25.8 (8)	18.8 (3)	33.3 (5)
Senior	12.9 (4)	18.8 (3)	6.7 (1)
Fifth-year senior and above	12.9 (4)	18.8 (3)	6.7 (1)
Estimated Cumulative GPA <sup><i>M</i>(<i>SD</i>)</sup>	3.07 (0.56)	3.17 (0.48)	2.96 (0.63)
Member of a Fraternity/Sorority	29.0 (9)	43.8 (7)	13.3 (2)
DSM-IV AUD			
No diagnosis	54.8 (17)	43.8 (7)	66.7 (10)
Abuse	45.2 (14)	56.3 (9)	33.3 (5)
DSM-5 AUD			
No diagnosis	74.2 (23)	68.8 (11)	80.0 (12)
Mild	22.6 (7)	25.0 (4)	20.0 (3)
Moderate	3.2 (1)	6.3 (1)	0.0
Family History+ for AUD <sup>a</sup>	9.7 (3)	12.5 (2)	6.7 (1)

Note. Percentages may not total 100% due to rounding. AUD = alcohol use disorder; DSM-IV = Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition; DSM-5 = Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition.

<sup>a</sup> Students were classified as family history positive for alcohol problems if they indicated that either of their parents or a step-parent had an alcohol problem—defined as a minimum of two identifiable DSM-IV AUD criteria for that family member.

Regarding academic major, 41.9% of the total sample endorsed engineering (e.g., civil, chemical, computer, electrical, mechanical), 19.4% endorsed business (e.g., accounting, business administration, finance), and 9.7% endorsed health professions (e.g., kinesiology, nursing). The balance of cases endorsed social sciences (e.g., psychology, sociology), biological and life

sciences (e.g., biology, microbiology, botany), education (e.g., physical, special, elementary), arts and humanities (e.g., art, music, journalism), or “other” as their current academic major. With respect to extracurricular activity involvement, 32.3% reported participation in intramural sports, 29.0% were a member of a fraternity or sorority, 29.0% were involved in a campus organization (e.g., university-sponsored clubs), 12.9% endorsed “other,” and 41.9% reported that they did not participate in any extracurricular activities. No students were a member of the university band or a varsity sports team. Overall, students reported engaging in extracurricular activities for an average of 5.16 hours per week. Regarding AUD diagnostic status, 45.2% of the total sample met DSM-IV criteria for alcohol abuse at baseline, and no students met criteria for alcohol dependence. When *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* (DSM-5; APA, 2013) criteria were applied, nearly one-quarter (22.6%) qualified for a mild AUD diagnosis, and only one student met criteria for a moderate AUD. The remaining 74.2% did not meet criteria for a DSM-5 AUD (i.e., mild, moderate, or severe). Only three students were classified as family history positive for alcohol problems—defined as a minimum of two identifiable DSM-IV AUD criteria for either of their parents or a step-parent.

As part of the standardized referral process, SAA completed an *Accountability and Action Form* in addition to an *Education Referral Form* for all students found responsible for one or more alcohol-related LSU Code of Student Conduct violation. Additional sources of relevant information that were provided to the Psychological Services Center at the time of referral included a *Student Statement Form*, which allowed students to furnish a detailed summary of the incident and identify potential witnesses or other pertinent information, and an *LSU Police Incident Notification Form*, which included an incident summary per the responding LSU Police officer, if applicable. Regarding the specific alcohol-related LSU Code of Student Conduct

violation(s) for which the student was found responsible, over half (54.8%) were referred due to “underage consumption.” A detailed breakdown of the remaining violation categories is as follows: underage possession/minor in possession of alcohol (MIP), 22.6%; public intoxication/drunken in public, 19.4%; consumption that endangers oneself, 19.4%; driving under the influence (DUI) or driving while intoxicated (DWI), 12.9%; possession of an open container of alcohol outside of approved university sites or events, 6.5%; and “other,” 32.3%. Over half (53.8%) were found responsible for a single alcohol-related offense, while 30.8% were found responsible for three or more offenses. Although all students were mandated to complete CHOICES, 12.9% were also required to complete an ethics and decision making class, and two students (6.5%) were required to complete an alcohol and drug education class. The former is taught by the LSU Department of Residential Life, while the education class is offered by the LSU Student Health Center. Additional sanctions imposed on students by SAA included community service hours (19.4%), an essay on an alcohol-related topic (16.1%), parental notification letter (12.9%), and an apology letter (6.5%). Finally, nearly all students (93.5%) were first-time offenders in that their current LSU Code of Student Conduct violation(s) represented their first involvement with SAA.

## **Measures**

**Demographics Questionnaire.** Demographic data including students’ age, sex, ethnicity, height and weight, place of residence (e.g., on-campus dormitory), academic class, employment status, academic major, and self-reported cumulative GPA were collected at baseline using a secure online data collection site. Data concerning the highest level of education attained by either of the students’ parents, student involvement in extracurricular activities (e.g., band, Greek

affiliation, intramural or varsity sports), and the number of hours per week they engaged in such activities were also collected.

**Rutgers Alcohol Problem Index (RAPI).** The RAPI (Appendix A; White & Labouvie, 1989) is a 23-item self-administered screening instrument commonly used in the assessment of alcohol-related problems as well as a program evaluation measure among both mandated and voluntary college student samples (Baer et al., 2001; Borsari & Carey, 2005; Borsari, Neal, Collins, & Carey, 2001; Carey, Carey, Maisto, & Henson, 2006; Marlatt et al., 1998; Murphy et al., 2001; White, Labouvie, & Papadaratsakis, 2005). Students were asked to rate each item on a 5-point Likert-type scale that corresponded to the total number of times they experienced each problem to assess eligibility for study participation and determine the role of alcohol in their personal, social, and academic functioning in the past month as an alcohol outcome measure.

The RAPI has relatively good psychometric properties. For instance, the RAPI possesses adequate face validity given all of the items were selected from existing instruments used in the assessment of alcohol-related problems (White, Filstead, Labouvie, Conlin, & Pandina, 1988; White & Labouvie, 1989), and has demonstrated good to excellent internal consistency (i.e.,  $\alpha$  ranged from .82 to .95) among college student samples (Carey et al., 2006; Earleywine, LaBrie, & Pedersen, 2008; Levy & Earleywine, 2003). The RAPI possesses good convergent validity with DSM-IV criteria for AUDs in that correlations between RAPI scores and the number of positive past 30-day and 12-month dependence criteria ranged from .70 to .82, respectively (Ginzler, Garrett, Baer, & Peterson, 2007). The RAPI has also been found to significantly correlate with several indices of alcohol consumption, including peak alcohol consumption ( $r = .60$ ), typical weekend quantity ( $r = .58$ ), total drinks per week ( $r = .57$ ), and average number of

drinking occasions in the past 3 months ( $r = .52$ ; Levy & Earleywine, 2003; Weingardt et al., 1998). Strong bivariate correlations between RAPI scores and both typical ( $r = .94$ ) and peak ( $r = .86$ ) weekly alcohol consumption have been observed (Borsari et al., 2001). Finally, a comparison of RAPI administration techniques revealed that 1-week test-retest reliabilities at 1- ( $r = .83$ ), 6- ( $r = .86$ ), and 12-month ( $r = .88$ ) intervals for the traditional paper-based method were similar to those found for the online assessment technique at the 1- ( $r = .78$ ), 6- ( $r = .89$ ), and 12-month ( $r = .88$ ) intervals (Miller et al., 2002). In addition, the finding that no significant differences were found between assessment techniques at the various intervals suggests that online administration of the RAPI is an acceptable alternative to the method of administration for which the RAPI was originally intended (i.e., paper-and-pencil).

**Daily Drinking Questionnaire (DDQ).** The DDQ (Appendix B; Collins et al., 1985; Kruse et al., 2005) is a commonly used measure in the assessment of students' alcohol consumption patterns, with a standard drink defined as 12 oz. beer, 4 oz. wine, or 1.25 oz. liquor. The DDQ has been successfully used as a self-report measure of alcohol use behaviors in previous college student drinking research (Baer et al., 2001; Borsari & Carey, 2000; Murphy et al., 2001) and has been found to be moderately reliable (i.e.,  $r$ s ranged from .43 to .58) in the assessment of drinking rates among college students when compared to collateral reports (Borsari & Carey, 2005; Carey et al., 2006; Marlatt et al., 1998). Reported test-retest reliability estimates for the DDQ over a 1-week period have ranged from good ( $r = .86$ ) to excellent ( $r = .93$ ) for paper-and-pencil and online administrations, respectively (Miller et al., 2002).

In the context of the present study, the timeframe covered by the DDQ at each assessment (i.e., baseline and 1-month follow-up) was the past 30 days. A modified version of the DDQ was used to yield continuous measures of: (a) total number of drinks per typical week (i.e., drinking

quantity), (b) total number of drinking days per typical week (i.e., drinking frequency), (c) frequency of binge-drinking episodes—defined as four or more drinks per occasion for women and five or more drinks per occasion for men (NIAAA, 2002), (d) typical weekly BAC, and (e) peak BAC on a single drinking occasion in the past 30 days. To provide an index of drinking quantity, the number of self-reported drinks consumed for each day of the week for a typical week during the past 30 days was summed across the seven days. The number of self-reported drinking days each student consumed alcohol was also summed to yield an index of drinking frequency. Consistent with prior college student drinking and brief motivational intervention outcomes research (Borsari & Carey, 2005; Borsari et al., 2001; Carey et al., 2006), peak BAC was assessed by asking students to estimate the maximum number of drinks consumed on a single drinking occasion in the past month and the total number of hours spent drinking on that day. Peak BAC was calculated by  $BAC = [(consumption/2) \times (GC/weight)] - (.016 \times hours)$ , where (a) consumption = total number of drinks consumed, (b) hours = total number of hours over which the drinks were consumed, and (c) GC = gender constant (9.0 for women and 7.5 for men; Matthews & Miller, 1979). Typical weekly BAC was calculated using a similar formula, where (a) consumption = mean number of drinks consumed during a typical week, (b) hours = mean number of hours over which the drinks were consumed during a typical week, and (c) GC = gender constant (9.0 for women and 7.5 for men).

**Brief Drinker Profile (BDP).** The BDP (Miller & Marlatt, 1984) is a brief structured interview designed to gather relevant information pertaining to family history of alcohol problems and personal drinking history. Consistent with previous ASTP research (Marlatt et al., 1998), students were dichotomously classified as family history positive or negative for alcohol problems based on whether they indicated that either of their parents or a step-parent had an

alcohol problem—defined as a minimum of two identifiable AUD criteria for that family member. The BDP has been used extensively in college student drinking research (Baer et al., 1992; Marlatt et al., 1998; Terlecki et al., 2010).

**Structured Clinical Interview for DSM-IV-TR Axis I Disorders, Patient Edition, Alcohol Use Disorders Module (SCID).** The AUD module of the SCID (First et al., 2002) provides detailed and thorough coverage of current and lifetime alcohol abuse and dependence. The SCID is widely accepted as the “gold standard” for clinical diagnostic assessments and has been used extensively in numerous settings in the assessment of substance use disorders (Basco et al., 2000; Gallagher, Penn, Brooks, & Feldman, 2006; Ginzler et al., 2007; Jordan, Karg, Batts, Epstein, & Wiesen, 2008; Lintonen et al., 2011). The SCID has been found to possess excellent interrater reliability for individual DSM-IV AUD criteria ( $k = .84-1.0$ ) as well as AUD diagnoses ( $k = .94$ ) among adolescent drinkers (Martin, Pollock, Bukstein, & Lynch, 2000). The AUD module of the SCID was administered at baseline to assess for eligibility for enrollment in the present randomized controlled trial. In addition, an item was included to assess for the new DSM-5 (APA, 2013) AUD criterion representing craving or a strong urge to consume alcohol to determine DSM-5 AUD diagnostic classifications.

**Program Evaluation Questionnaire.** Following completion of CHOICES, students completed a 5-item program evaluation questionnaire (Appendix C). The questionnaire asked students to rate, on a 4-point Likert-type scale, how understandable the program was, how helpful they believed it would be in changing their future drinking behavior, how helpful they believed it would be in changing their future general lifestyle behaviors, how likely they would be to recommend the program to others, and how likely they were to keep the CHOICES Interactive Journaling® booklet following completion of the program. The questionnaire was



modeled after a similar program evaluation questionnaire utilized in previous ASTP research (Baer et al., 1992).

### **Intervention**

A 16-page Interactive Journal titled, “CHOICES About Alcohol: A Brief Alcohol Abuse Prevention Program,” developed by Marlatt and Parks (2010), was used as the intervention in the present randomized controlled trial. The journal is appropriate for use with high-risk college student drinkers who have experienced or are at risk of developing alcohol-related problems. The primary focus of the journal is to assist students in connecting their alcohol use patterns with the various problems they may have experienced as a result of their alcohol use. The journal is a tool by which students can weigh the costs and benefits of different options they might pursue and develop a potential plan for positive life change following completion of the program.

The journal is based on the TMC (Prochaska & Velicer, 1997), a theoretical model of behavior change in which change is viewed as a process involving several stages. The TMC provides an integrative framework for how individuals progress through the various stages of change and move toward adopting and maintaining a particular health behavior. One of the first steps in stage progression is recognizing and accepting the existing problem. The CHOICES journal encourages students to reflect on the choices that have led to their current involvement with SAA and recognize alternative, more acceptable ways to lay the foundation for a more rewarding life. That is, the journal is designed to help guide students as they make the transition from the precontemplation to the contemplation or action stage of change. The journal utilizes a combination of colored images, factual information, and simple individual writing exercises to engage students as they consider the process of making a positive life change.

To facilitate the process of making a positive life change and provide students with an introduction to the change process itself, the initial activity in the CHOICES journal is for students to write about alcohol's role in their social life. Questions are posed to the students for written response within the journaling booklet. The structured journaling exercises may assist students in engaging the material and in applying new information to their individual life circumstances (Parks & Woodford, 2005). The journal then includes a decisional balance exercise in which students are guided in formulating the perceived rewards and costs of drinking during college, followed by allotted space for the students to list their observations of the desirable and undesirable consequences of drinking. In another section of the journal, students are advised that most often, students experience harm from alcohol because they subject themselves to three common areas of risk (i.e., risky drinking styles, risky drinking activities and settings, and risky social situations), and are asked to provide relevant personal examples for each of the three risk categories. Subsequent sections of the journal then present students with a menu of strategies designed to minimize the alcohol-related harm associated with each risk category, to which students are asked to mark those strategies that might be of most interest to them. For example, a student who indicates that he or she regularly attends a particular drinking establishment on a particular night of the week due to the various drink specials offered ("free drinks from 10:00 p.m. to 12:00 a.m.," "\$1 beer night," "all you can drink for \$10," etc.), may find the individual drinking strategy, "Be cautious in settings where large quantities of free or low cost alcohol are available" most useful. In this instance, the facilitator would then discuss that the easier it is to obtain alcohol, the more likely it is that students are to lose track of how much they are drinking, and note that it is important for the student to be aware of how much he or she is drinking and to manage the amount of alcohol he or she consumes—no matter how

accessible the drinks may be. Additional topics addressed in the journal include: standard drink and measuring student alcohol consumption, factors affecting BAC and the effects of tolerance on BAC, the biphasic effect of alcohol, alcohol poisoning risk and response, harm reduction strategies, and a section for the students to write their reactions to the CHOICES program.

## **Procedure**

The study was conducted at the LSU Psychological Services Center. On the day of the student's scheduled appointment, the student met individually with a trained graduate student therapist (see Intervention Integrity). Prior to data collection, the interviewer obtained informed consent. All students were made aware that participation was voluntary, and they had the right to cease participation at any time without penalty by completing a notification form. After informed consent was obtained, students were administered a structured clinical interview and completed baseline assessment measures of their current substance use patterns via a secure online data collection site to assess eligibility. Students who declined research participation or those who endorsed a history of severe and persistent alcohol-related symptoms (i.e., met DSM-IV-TR criteria for moderate to severe alcohol dependence) based on the AUD module of the SCID were excluded and referred for more extensive assessment and intensive alcohol treatment. The online assessments were password-protected to assure confidentiality of responses and did not ask students to include their name or other identifying information. Online and computer data were coded using a unique identification number to protect confidentiality. Computerized and paper-and-pencil versions of self-report measures have been found to produce equivalent scores and are highly correlated (Gwaltney, Bartolomei, Colby, & Kahler, 2008; Miller et al., 2002). The application of computerized versions of self-report assessment measures has been found to offer advantages to both researchers and study participants without compromising the reliability of the

results drawn from the data (Miller et al., 2002). Data entry errors can also be reduced given there is no manual entering of data by research staff (Cloud & Peacock, 2001; Gwaltney, Shields, & Shiffman, 2008).

To reduce baseline differences on select demographic characteristics as well as drinking behaviors between study conditions, a computer-assisted urn randomization procedure was utilized (Project MATCH Research Group, 1993; Stout, Wirtz, Carbonari, & Del Boca, 1994; Wei, 1978) in order to maximize the likelihood that the composition of the two groups was balanced with respect to the following variables: (a) sex, (b) Greek membership status (i.e., member of a fraternity or sorority), and (c) baseline RAPI scores. The urn randomization design represents a compromise between designs that yield perfect balance in regard to treatment assignment and complete randomization, which eliminates experimental bias (Wei & Lachin, 1988). The urn design is also ideal for treatment outcomes research with a small sample size given that this process approximates standard randomization as the sample size increases (Dirienzo, 2000). Thus, eligible participants were randomized using a computer-assisted urn randomization procedure and subsequently allocated to either: (a) the CHOICES condition, or (b) the assessment-only wait-list control condition of the study. Students assigned to the intervention condition then received CHOICES (i.e., a single 90-minute individual session) and a follow-up assessment at 1 month post-intervention in which they were contacted and asked to complete measures of alcohol use and alcohol-related problems using the secure online data collection site. To ensure that follow-up data were collected at the same time, the control group was asked to complete the same self-report online measures 1 month after the baseline assessment interview. Among those students allocated to the CHOICES condition, research participation through the 1-month post-intervention assessment fulfilled their obligation to SAA

regarding completion of a brief mandated alcohol intervention. Students assigned to the control condition fulfilled their obligation to SAA after they received the CHOICES intervention following completion of the 1-month follow-up assessment.

### **Intervention Integrity**

The clinical supervisor and study interventionists completed a one-day intensive CHOICES training workshop conducted by one of the co-developers of CHOICES (i.e., George A. Parks, Ph.D.), which involved the use of didactic instruction and practicing role-plays with feedback. Competence of the interventionists in the motivational style was also ensured via weekly clinical supervision by Amy L. Copeland, Ph.D., a clinical psychologist trained in motivational interviewing techniques and the delivery of brief alcohol interventions for college students. Dr. Copeland's qualifications include completion of a two-day intensive brief motivational intervention training workshop at the University of Washington, Seattle in the research laboratory that developed the CHOICES program, and ongoing collaboration with Mary E. Larimer, Ph.D., another expert in the field of brief alcohol interventions for college students.

### **Outcomes**

Primary outcome variables are consistent with those reported in the college student drinking literature (Borsari & Carey, 2000; Carey et al., 2006; Murphy et al., 2001): (a) number of past-month alcohol-related problems as measured by the RAPI, (b) number of drinks consumed per typical week, (c) number of drinking days per typical week, (d) frequency of past-month binge-drinking episodes, (e) typical weekly BAC, and (f) peak BAC on a single drinking occasion in the past 30 days as measured by the DDQ.

## Data Analyses

**Baseline Differences and Success of Randomization.** Several analyses were conducted to test for the success of randomization and determine if there were preliminary descriptive differences on demographic characteristics and baseline measures of alcohol use between students allocated to the CHOICES and control conditions of the study. Comparisons on continuous variables were examined using a one-way (treatment assignment: CHOICES and control) between-groups analysis of variance (ANOVA). Similarly, a chi-square analysis was conducted for all categorical variables (i.e., Greek membership status, sex, ethnicity, AUD diagnostic status, academic class year, and family history of alcohol problems).

**Treatment Effects.** To assess the impact of CHOICES on reductions in alcohol use and alcohol-related problems among mandated high-risk college student drinkers relative to the assessment-only wait-list control condition, six one-way between-groups ANOVAs were conducted using difference scores (pre- minus post-test scores on the primary outcome variables). The independent variable was treatment assignment with two levels: CHOICES and control. Six dependent variables were examined: (a) alcohol-related problems, (b) drinks per week, (c) drinking days per week, (d) frequency of past-month binge-drinking episodes, (e) typical weekly BAC, and (f) peak BAC during a single drinking occasion in the past month. Although a multivariate analysis of variance (see Marlatt et al., 1998) or covariance controlling for pre-test scores (see Murphy et al., 2001) represent appropriate methods to examine these type of data, given the limited sample size and research question of interest for the present study (i.e., whether the improvement in scores from pre-test to post-test was greater for the CHOICES group than it was for the control group), mean difference scores were computed and analyzed in a series of one-way ANOVAs. Per the recommendation of Kim (2013), a combination of visual

inspection (i.e., mean and 5% trimmed mean, histograms, and normal Q-Q plots), assessment using skewness and kurtosis, and formal normality tests (i.e., Shapiro-Wilk and z-tests) was used in the preliminary assumption testing of normality for the planned analyses given the small sample size.

## CHAPTER 4: RESULTS

### Baseline Differences and Success of Randomization

Descriptive data for the six primary outcome variables at the various assessment points, stratified by study condition, are presented in Table 2. Results from the separate one-way between-groups ANOVAs revealed that students allocated to the CHOICES condition did not significantly differ from students allocated to the control condition at the baseline assessment on the six primary outcome variables: alcohol-related problems [ $F(1, 29) = 2.29, p = .141$ ], frequency of alcohol consumption [ $F(1, 29) = 2.36, p = .135$ ], quantity of alcohol consumption [ $F(1, 29) = 0.41, p = .528$ ], frequency of binge-drinking episodes [ $F(1, 29) = 0.39, p = .536$ ], typical weekly BAC [ $F(1, 29) = 0.01, p = .984$ ], and peak BAC during a single drinking occasion in the past month [ $F(1, 29) = 1.76, p = .195$ ]. Similarly, there were no significant differences noted between groups at the baseline assessment on age [ $F(1, 29) = 0.79, p = .382$ ], self-reported GPA [ $F(1, 29) = 1.04, p = .316$ ], sex [ $\chi^2(1, N = 31) = 0.01, p = .930, \phi = .016$ ], ethnicity [ $\chi^2(1, N = 31) = 0.97, p = .325, \phi = .177$ ], Greek involvement [ $\chi^2(1, N = 31) = 3.48, p = .062, \phi = .335$ ], academic class year [ $\chi^2(4, N = 31) = 3.11, p = .539, V = .317$ ], DSM-IV AUD diagnostic status [ $\chi^2(1, N = 31) = 1.64, p = .200, \phi = .230$ ], DSM-5 AUD diagnostic status [ $\chi^2(2, N = 31) = 1.16, p = .561, V = .193$ ], and family history of alcohol problems [ $\chi^2(1, N = 31) = 0.30, p = .583, \phi = .099$ ].



Table 2. Means (Standard Deviations) of Primary Outcomes across Assessment Points

Assessment Point	Overall	Study Condition	
		CHOICES	Control
Drinks per week			
Baseline	11.79 (5.22)	12.38 (3.69)	11.17 (6.55)
1 month	8.53 (8.18)	9.01 (6.63)	7.93 (9.78)
Drinking days per week			
Baseline	2.42 (1.03)	2.69 (1.08)	2.13 (0.92)
1 month	2.06 (1.53)	2.38 (1.45)	1.73 (1.58)
Binge-drinking episodes			
Baseline	4.00 (2.84)	4.31 (2.80)	3.67 (2.94)
1 month	2.29 (2.47)	2.38 (2.33)	2.20 (2.68)
Typical BAC			
Baseline	.018 (.018)	.018 (.017)	.019 (.019)
1 month	.037 (.040)	.040 (.031)	.034 (.049)
Peak BAC			
Baseline	.112 (.075)	.095 (.057)	.130 (.088)
1 month	.051 (.053)	.063 (.049)	.038 (.056)
Alcohol-related problems			
Baseline	8.65 (6.72)	10.38 (7.71)	6.80 (5.07)
1 month	3.71 (5.11)	4.38 (5.83)	3.00 (4.29)

### Treatment Effects

The effects of intervention on various indicators of alcohol use and alcohol-related problems over time were examined using difference scores for the six primary outcome variables (Table 3). Overall, the CHOICES group did not differ significantly from the control group on reductions of number of alcohol-related problems [ $F(1, 29) = 1.20, p = .283$ ], typical weekly alcohol consumption [ $F(1, 29) = 0.01, p = .980$ ], frequency of typical weekly alcohol consumption [ $F(1, 29) = 0.04, p = .850$ ], frequency of past-month binge-drinking episodes [ $F(1, 29) = 0.33, p = .570$ ], and typical weekly BAC [ $F(1, 29) = 0.24, p = .629$ ] as indicated by the series of one-way ANOVAs. However, the reduction in peak BAC during a single drinking occasion in the past month from baseline to the 1-month follow-up was significantly larger for the control condition compared to the CHOICES condition [ $F(1, 29) = 4.84, p = .036$ ]. Students

assigned to the control condition experienced a mean difference in peak BAC of .092, while students assigned to the CHOICES condition experienced a mean difference in peak BAC of .032. The relative magnitude of the mean difference in peak BAC between groups represented a large effect size. Given the observed power (i.e.,  $1-\beta = .56$ ), however, some caution is warranted in interpreting this finding. These findings revealed that, in general, comparable reductions in various indicators of alcohol use and alcohol-related problems were observed, whether or not students received the baseline assessment interview only or CHOICES in addition to the baseline assessment interview.

Table 3. Mean Difference Scores (Standard Deviations) on Primary Outcomes by Condition

Variable	Study Condition		<i>F</i>	$\eta_p^2$	<i>p</i>
	CHOICES	Control			
Drinks per week	3.28 (5.60)	3.23 (5.15)	0.01	.01	ns
Drinking days per week	0.31 (1.45)	0.40 (1.06)	0.04	.04	ns
Binge-drinking episodes	1.94 (2.67)	1.47 (1.77)	0.33	.01	ns
Typical BAC	-.022 (.031)	-.016 (.039)	0.24	.01	ns
Peak BAC	.032 (.070)	.092 (.081)	4.84	.14	.036
Alcohol-related problems	6.00 (6.73)	3.80 (4.02)	1.20	.04	ns

### Program Evaluation

Following the intervention, students completed a 5-item program evaluation questionnaire. Given that students assigned to the control condition were mandated to complete CHOICES in order to fulfill their obligation to SAA, they received the intervention following completion of the 1-month follow-up measures. Thus, program evaluation data were available for 23 students. Results revealed that 56.5% of students rated CHOICES as “extremely” understandable, and the remaining 43.5% found CHOICES “very” understandable. Regarding how helpful students believed the CHOICES program would be in changing in their future

drinking behavior, 87.0% endorsed “extremely” or “very,” while only 13.0% endorsed “somewhat.” Although not quite as marked, 69.6% indicated that they believed the CHOICES program would be “extremely” or “very” helpful in changing their future general lifestyle behaviors, while 30.4 endorsed “somewhat.” The majority (65.2%) of students reported that they were “extremely” or “very” likely to recommend the CHOICES program to others, while 34.8% endorsed “somewhat.” Finally, 60.8% of students reported that they were “extremely” or “very” likely to keep the Interactive Journal for future reference following completion of the CHOICES program.

## CHAPTER 5: DISCUSSION

The aim of the present study was to evaluate the efficacy of CHOICES, delivered in the context of a single individual session, in reducing alcohol use and alcohol-related problems among high-risk mandated college student drinkers. It was hypothesized that students assigned to the CHOICES condition would experience significantly larger reductions at the 1-month follow-up in terms of number of drinks consumed per typical week, number of drinking days per typical week, binge-drinking episodes, alcohol-related problems, as well as typical weekly BAC and peak BAC on a single drinking occasion in the past 30 days relative to the assessment-only wait-list control group. Contrary to prediction, and quite surprisingly, the main finding from the present study was that students allocated to the CHOICES condition did not fare better than students who received the baseline assessment procedure only on any of the six primary outcome variables. That is, comparable reductions were observed with respect to five of the six primary outcomes, regardless of condition assignment, with a significantly larger reduction in terms of peak BAC for the control condition relative to the CHOICES condition.

The results extend and partially support prior work which found that CHOICES was not associated with significant reductions in various indicators of problematic alcohol use (Alfonso et al., 2012). The only study to date that examined the effects of CHOICES on alcohol use and alcohol-related problems compared CHOICES delivered in a group format to two additional alcohol feedback interventions among mandated college students (Alfonso et al., 2012). Previous findings revealed that there were no significant reductions on all drinking outcomes at 3 months for students assigned to the CHOICES condition. The present study's findings indicated that mandated students who received CHOICES in addition to an alcohol use assessment did not experience significantly larger reductions on any of the six primary drinking outcomes at 1

month relative to students who received the assessment-only procedure. The results are consistent with those from previous research investigating the efficacy of a similar self-help manual format based on the ASTP content in the treatment of high-risk young adult drinkers (Baer et al., 1992). Unlike prior published work, however, the present study examined the impact of CHOICES delivered in the context of a single individual session, rather than in a group format, and utilized a sample comprised solely of high-risk college student drinkers. The present study also included an assessment-only control group as opposed to active treatment comparison groups. This strategy yielded several important implications in that irrespective of the delivery format and sample composition, CHOICES did not result in more favorable clinical outcomes relative to the assessment-only wait-list control group.

Several reasons may account for the observed findings. In light of the most obvious limitation pertaining to sample size, CHOICES—as it was evaluated in the context of the present study—included a single individual session. Conversely, BASICS, a similar brief motivational intervention based on the ASTP curriculum with demonstrated efficacy, is intended to be delivered via two sessions, separated by a 2-week period of self-monitoring of alcohol use (Dimeff et al., 1999). In fact, evidence from a study comparing CHOICES delivered in a single group session to BASICS delivered in two individual sessions found significant reductions in alcohol use and alcohol-related problems among students assigned to the BASICS condition, while no significant reductions were found for the CHOICES condition (Alfonso et al., 2012). In other words, not only does BASICS involve an additional session, but it includes the added benefit of two weeks of self-monitoring. However, studies evaluating BASICS in the context of a single session, ranging from 10 to 50 minutes, have also reported significant reductions on various drinking outcomes among high-risk college student drinkers (Borsari & Carey, 2000;

Kulesza, Apperson, Larimer, & Copeland, 2010; Larimer & Cronce, 2002, 2007). Thus, the discrepancy between the present findings and those from prior brief motivational intervention research among college student drinkers may be better accounted for by the specific clinical content and skills covered, as opposed to the number of treatment sessions. Given self-monitoring alone appears to be an effective strategy for alcohol abuse prevention programming with high-risk college student drinkers (Garvin et al., 1990; Sobell & Sobell, 1973), the absence of self-monitoring in the CHOICES program is not trivial.

In addition, the extent to which positive alcohol expectancies (i.e., students' beliefs that alcohol consumption leads to feeling more socially outgoing, sexually attractive, etc.) are covered in CHOICES is not as thorough as it is for BASICS. Although CHOICES discusses the biphasic response to alcohol in an attempt to debunk the myth that "more is better," positive alcohol use expectancies and the findings from the balanced placebo design are not explicitly addressed. BASICS supplements the discussion of the "more is better" myth by reviewing the self-monitoring cards and discussing the potential for placebo effects by way of laboratory research using the balanced placebo design (Marlatt et al., 1973). Given that brief motivational interventions which address students' expectations regarding drinking tend to result in decreases in positive alcohol expectancies and alcohol-related outcomes (Larimer & Cronce, 2007), inclusion of such information in the CHOICES curriculum may produce more favorable outcomes. Previous research also suggests that the provision of feedback which counters one's perceptions of alcohol's causal role in enhancing social interactions can lead to reductions in alcohol consumption (Darkes & Goldman, 1993; Darkes & Goldman, 1998). However, CHOICES does not include detailed coverage of all of the clinical content areas included in

BASICS due to practical limitations of time and effort in delivering a brief, single-session motivational intervention.

Additional potential explanations for the observed findings relate to the notion that a comprehensive alcohol use assessment or the alcohol-related sanction may, in and of themselves, produce reductions in alcohol consumption and associated harms. In fact, research has documented that students receiving an assessment procedure only evinced similar positive drinking outcomes relative to students receiving a brief motivational intervention (Carey et al., 2006; Murphy et al., 2001). All study participants in the present study, regardless of condition, attended a baseline assessment in which they completed various measures of their alcohol use and alcohol-related problems (e.g., DDQ, RAPI) as well as a structured clinical interview (i.e., SCID) covering DSM-IV and DSM-5 criteria for personal and family history of AUDs. Thus, both conditions may have experienced comparable reductions on nearly all of the study outcomes as a result of the increased awareness they conceivably gained regarding the negative consequences associated with their drinking behavior by way of the baseline assessment procedure. Future research may consider an assessment of students' awareness of their alcohol use via indicators of their perceived importance of changing their drinking behavior and the extent to which they believe change is possible (e.g., importance and confidence visual analog scales; Rollnick, 1998; Carey et al., 2002). Administration of such measures both before and after the comprehensive alcohol use assessment may delineate the effect of the assessment procedure itself on students' awareness of their problematic alcohol use. Although the comprehensive alcohol use assessment may explain the observed findings, it is equally important to consider the effect of the sanction itself on students' drinking behaviors. In fact, students mandated to complete a brief alcohol intervention have been found to significantly reduce their

drinking on a number of drinking variables (i.e., drinks per week, drinks per drinking occasion, peak drinks, and peak BAC) following an alcohol-related sanction even before they received the intervention (Merrill, Carey, Reid, & Carey, 2013)

Contrary to our hypothesis, students assigned to the assessment-only wait-list control condition experienced a significantly larger mean reduction in peak BAC relative to students assigned to the CHOICES condition. Although this finding should be interpreted in light of the rather small sample size, perhaps a thorough assessment of students' personal and family history of alcohol use afforded students with an opportunity to focus on the most salient aspects of their problematic alcohol use without raising defensiveness. Given students assigned to the CHOICES condition completed the same comprehensive assessment in addition to a 90-minute intervention, it is possible that students became overwhelmed or fatigued due to the total length of the treatment session. Anecdotally, the baseline assessment ranged from 30 to 60 minutes based on the extent of the student's endorsement of alcohol-related problems. Thus, the length of the appointment for students allocated to the CHOICES condition ranged from 2 to 2.5 hours, which in turn, may have created a problem for them in terms of retaining the information due presumably to a depletion of attentional resources over time. The administration of measures of defensiveness immediately following the intervention appears to be a logical next step for further research to determine if the length of the treatment session increases level of defensiveness in college student drinkers mandated to complete a "brief" alcohol intervention. Such work is also important given increased levels of defensiveness have been found to have a significant moderating effect on ASTP drinking outcomes among mandated students (Palmer et al., 2010).

An additional area that warrants further comment pertains to the students' responses from the program evaluation questionnaire. The prerequisite for Interactive Journaling®, or any



approach designed to facilitate behavior change, is that the intervention be favorably received by the population whose behavior is to be altered. In other words, an important consideration in determining the potential efficacy of a novel intervention for college student drinkers is to explore the extent to which they are satisfied with the intervention. The general consensus among students was that the CHOICES program was both understandable and helpful, and they intended to not only keep the Interactive Journal for future reference, but recommend the program to others following completion of the program. Of particular interest, none of the students endorsed “not at all” on any of the five program evaluation areas. It is important to note, however, that although CHOICES Interactive Journaling® appears to be well-received by students, it does not appear to result in larger reductions in alcohol use and alcohol-related problems relative to students who complete an assessment of their alcohol use only (i.e., the wait-list control condition of the study).

Despite generally null findings, the study possessed several strengths, including the use of a randomized controlled design, which successfully accounted for baseline differences on a number of relevant variables known to impact drinking outcomes (i.e., sex, Greek membership status, and alcohol-related problems), as well as the use of reliable and valid measures of alcohol use and related harms. Intervention integrity was also ensured via intensive training on the delivery of CHOICES by the program co-developer and regular clinical supervision by an expert in the area of brief motivational interventions. However, more stringent evidence of acceptable fidelity from a tested motivational interviewing adherence instrument via regular review of videotaped sessions and rating a random set of videotapes to determine whether all intervention content was adequately covered (Carey et al., 2006) would have further ensured the competence of the interventionists in the motivational style (Health Foundation, 2011). Together, the

aforementioned strengths improved the quality of research criteria per NREPP regarding studies employing the use of Interactive Journaling®, but study findings failed to establish evidence in support of CHOICES as an effective Tier I intervention per NAIAA criteria in that 1-month drinking outcomes were comparable to those of students who did not receive the intervention.

### **Limitations**

The findings from the present study should be considered in light of several limitations that suggest the need for additional work in the area of brief motivational interventions for mandated college student drinkers. Perhaps the most obvious limitation concerns the sample size and resultant inadequate power. The observed findings should be considered preliminary at best, and as such, warrant the need for further investigation with a larger sample. Second, the sample was comprised exclusively of mandated college student drinkers from a large public university, and Caucasian ethnicity was heavily represented (96.8%). Thus, the inclusion of voluntary students is a requisite for future investigations to determine how they might respond to the journaling process in an effort to evaluate the intervention effects distinct from effects of the sanction itself on suppressing drinking behaviors among mandated student populations. One would also need to be cautious in extrapolating the findings to smaller universities or those with a more diverse racial composition. Third, although a relative strength, the longitudinal design of the present study may also be considered a limitation in some respects. That is, given students were followed up for 1 month, it remains unclear if the comparable reductions in the primary outcome variables would have sustained themselves over a longer follow-up period, or conversely, if students assigned to the CHOICES condition would have experienced significantly larger reductions at a later point in time. The latter is particularly salient given the potential for “sleeper effects” (i.e., limited or no short-term reductions in alcohol outcomes followed by

stronger effects at a later time post-intervention) among college student drinkers mandated to complete a brief motivational intervention (White, Mun, Pugh, & Morgan, 2007). Another limitation concerns the breadth of clinical data collected for the present study's analyses. Students' motivation and readiness to change, perceived descriptive and injunctive drinking normative beliefs, as well as perceived self-efficacy were not examined, and are important individual difference factors to consider in future work given their influence on alcohol consumption, alcohol-related problems, and various additional clinical outcomes of interest among both mandated and voluntary college student drinkers (Blume, Schmalzing, & Marlatt, 2003; Carey, Henson, Carey, & Maisto, 2010; Fromme & Corbin, 2004). Studies that evaluate the potential mediators and moderators of efficacy for CHOICES, and separate the effects of its various components, are clearly warranted to improve outcomes. Finally, as is the case with the use of all self-report data, the possibility remains that response and recall bias may have been introduced given the nature of such a method. Future research would benefit from a multi-method, multi-informant approach.

## CHAPTER 6: SUMMARY AND CONCLUSIONS

In light of the aforementioned study limitations and preliminary nature of the reported findings, the present study does represent the first study to date which investigated the efficacy of CHOICES in the context of a single individual session relative to a control group. Prior work demonstrated that CHOICES delivered in group format did not result in significant reductions in alcohol use and alcohol-related problems (Alfonso et al., 2012), and the present study's findings suggest that students who received CHOICES delivered in individual format did not fare better than students who completed a baseline assessment of their alcohol use. With respect to the acceptability of CHOICES Interactive Journaling®, the intervention was overwhelmingly rated as favorable on all of the program evaluation areas by all students who completed the program. Despite high levels of student satisfaction with the intervention, the preliminary results of this study did not support the hypothesis that CHOICES would be more efficacious than an assessment-only wait-list control group in reducing alcohol-related problems and several indicators of alcohol use. If future replication work with a larger sample size and longer follow-up interval support the preliminary findings reported here, CHOICES may not offer any clinical benefits above and beyond those from a thorough assessment of alcohol use problems. Should future research support the reported findings, a comprehensive in-person assessment of personal and family history of alcohol use and alcohol-related problems may represent an efficacious and cost-effective approach for mandated college student drinkers. Obvious ethical difficulties, however, may preclude a longer randomized controlled trial beyond the follow-up interval examined here. Thus, the present study may best be considered as an important first step in providing evidence that CHOICES delivered in individual format in addition to an alcohol

assessment procedure does not appear to be more efficacious than an assessment procedure only, and additional research is clearly warranted in order to provide more definitive and robust conclusions.

## REFERENCES

- Akers, R. L., Krohn, M. D., Lanza-Kaduce, L., & Radosevich, M. (1979). Social learning and deviant behavior: A specific test of general theory. *American Sociological Review*, *44*, 636-655.
- Alfonso, J., Hall, T. V., & Dunn, M. E. (2013). Feedback-based alcohol interventions for mandated students: An effectiveness study of three modalities. *Clinical Psychology and Psychotherapy*, *20*, 411-423. doi: 10.1002/cpp.1786
- American Psychiatric Association. (1987). *Diagnostic and Statistical Manual of Mental Disorders, Revised* (3rd ed.). Washington, DC: American Psychiatric Association.
- American Psychiatric Association. (1994). *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.). Washington, DC: American Psychiatric Association.
- American Psychiatric Association. (2000). *Diagnostic and Statistical Manual of Mental Disorders, Text Revision* (4th ed.). Washington, DC: American Psychiatric Association.
- American Psychiatric Association. (2003). *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.). Washington, DC: American Psychiatric Association.
- Ames, S. C., Ames, G. E., Stevens, S. R., Patten, C. A., Werch, C. E., & Schroeder, D. R. (2008). Effect of expressive writing as a treatment adjunct for reducing smoking cessation related weight gain in young adult smokers. *Substance Use & Misuse*, *43*, 1315-1325. doi: 10.1080/10826080801922082
- Baer, J. S., Kivlahan, D. R., Blume, A. W., McKnight, P., & Marlatt, G. A. (2001). Brief interventions for heavy-drinking college students: 4-year follow-up and natural history. *American Journal of Public Health*, *91*, 1310-1316.
- Baer, J. S., Marlatt, G. A., Kivlahan, D. R., Fromme, K., Larimer, M. E., & Williams, E. (1992). An experimental test of three methods of alcohol risk reduction with young adults. *Journal of Consulting and Clinical Psychology*, *60*, 974-979. doi: 10.1037/0022-006X.60.6.974
- Baikie, K. A., Wilhelm, K., Johnson, B., Boskovic, M., Wedgwood, L., Finch, A., & Huon, G. (2006). Expressive writing for high-risk drug dependent patients in a primary care clinic: A pilot study. *Harm Reduction Journal*, *3*. Retrieved from [www.harmreductionjournal.com](http://www.harmreductionjournal.com)
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, *84*, 191-215.

- Barnett, N. P., Goldstein, A. L., Murphy, J. G., Colby, S. M., & Monti, P. M. (2006) I'll never drink like that again: Characteristics of alcohol-related incidents and predictors of motivation to change in college students. *Journal of Studies on Alcohol*, *67*, 754-763.
- Barnett, N. P., & Read, J. P. (2005). Mandatory alcohol intervention for alcohol abusing college students: A systematic review. *Journal of Substance Abuse Treatment*, *29*, 147-158. doi: 10.1016/j.jsat.2005.05.007
- Basco, M. R., Bostic, J. Q., Davies, D., Rush, A. J., Witte, B., Hendrickse, W., & Barnett, V. (2000). Methods to improve diagnostic accuracy in a community mental health setting. *The American Journal of Psychiatry*, *157*, 1599-1605. doi: 10.1176/appi.ajp.157.10.1599
- Benton, S. L., Downey, R. G., Glider, P. S., Benton, S. A., Shin, K., Newton, D. W., et al. (2006). Predicting negative drinking consequences: Examining descriptive norm perception. *Journal of Studies on Alcohol*, *67*, 399-405.
- Blanco, C., Okuda, M., Wright, C., Hasin, D. S., Grant, B. F., Liu, S. M., & Olfson, M. (2008). Mental health of college students and their non-college-attending peers: Results from the National Epidemiologic Study on Alcohol and Related Conditions. *Archives of General Psychiatry*, *65*, 1429-1437. doi: 10.1001/archpsyc.65.12.1429
- Blume, A. W., Schmalings, K. B., & Marlatt, G. A. (2003). Predictors of change in binge drinking over a 3-month period. *Addictive Behaviors*, *28*, 1007-1012. doi: 10.1016/S0306-4603(01)00287-8
- Borsari, B., & Carey, K. B. (2000). Effects of a brief motivational intervention with college student drinkers. *Journal of Consulting and Clinical Psychology*, *68*, 728-733. doi: 10.1037/W022.006X.68.4.72B
- Borsari, B., & Carey, K. B. (2005). Two brief alcohol interventions for mandated college students. *Psychology of Addictive Behaviors*, *19*, 296-302. doi: 10.1037/0893-164X.19.3.296
- Borsari, B., Neal, D. J., Collins, S. E., & Carey, K. B. (2001). Differential utility of three indexes of risky drinking for predicting alcohol problems in college students. *Psychology of Addictive Behaviors*, *15*, 321-324. doi: 10.1037//0893-164X.15.4.321
- Camp, S. D., Daggett, D. M., Kwon, O., & Klein-Saffran, J. (2008). The effect of faith program participation on prison misconduct: The Life Connections Program. *Journal of Criminal Justice*, *36*(5), 389-395. doi: 10.1016/j.jcrimjus.2008.07.004
- Carey, K. B., Carey, M. P., Maisto, S. A., & Henson, J. M. (2006). Brief motivational interventions for heavy college drinkers: A randomized controlled trial. *Journal of Consulting and Clinical Psychology*, *74*, 943-954. doi: 10.1037/0022-006X.74.5.943

- Carey, K. B., Carey, M. P., Maisto, S. A., & Purnine, D. M. (2002). The feasibility of enhancing psychiatric outpatients' readiness to change their substance use. *Psychiatric Services, 53*, 602-608.
- Carey, K. B., Henson, J. M., Carey, M. P., & Maisto, S. A. (2010). Perceived norms mediate effects of a brief intervention for sanctioned college student drinkers. *Clinical Psychology: Science and Practice, 17*, 58-71.
- Chaloupka, F. J., & Wechsler, H. (1996). Binge drinking in college: The impact of price, availability, and alcohol control policies. *Contemporary Economic Policy, 14*, 112-124. doi: 10.1111/j.1465-7287.1996.tb00638.x
- Cloud, R. N., & Peacock, P. L. (2001). Internet screening and interventions for problem drinking: Results from the www.carebetter.com pilot study. *Alcoholism Treatment Quarterly, 19*, 23-44.
- Collins, R. L., Parks, G. A., & Marlatt, G. A. (1985). Social determinants of alcohol consumption: The effects of social interaction and model status on self-administration of alcohol. *Journal of Consulting and Clinical Psychology, 53*, 189-200. doi: 10.1037/0022-006X.53.2.189
- Covington, S. (2002). *Women in Recovery: Understanding Addiction*. Carson City, NV: The Change Companies.
- Darkes, J., & Goldman, M. S. (1993). Expectancy challenge and drinking reduction: Experimental evidence for a mediational process. *Journal of Consulting and Clinical Psychology, 61*, 344-353. doi: 10.1037/0022-006X.61.2.344
- Darkes, J., & Goldman, M. S. (1998). Expectancy challenge and drinking reduction: Process and structure in the alcohol expectancy network. *Experimental and Clinical Psychopharmacology, 6*, 64-76.
- Dearing, R. L., Witkiewitz, K., Connors, G. J., & Walitzer, K. S. (2013). Prospective changes in alcohol use among hazardous drinkers in the absence of treatment. *Psychology of Addictive Behaviors, 27*, 52-61. doi: 10.1037/a0028170
- Deaver, S. P., & McAuliffe, G. (2009). Reflective visual journaling during art therapy and counseling internships: A qualitative study. *Reflective Practice, 10*, 615-632. doi: 10.1080/14623940903290687
- DiFulvio, G. T., Linowski, S. A., Mazziotti, J. S., & Puleo, E. (2012). Effectiveness of the Brief Alcohol and Screening Intervention for College Students (BASICS) program with a mandated population. *Journal of American College Health, 60*, 269-280. doi: 10.1080/07448481.2011.599352



- Dimeff, L. A., Baer, J. S., Kivlahan, D. R., & Marlatt, G. A. (1999). *Brief Alcohol Screening and Intervention for College Students: A harm reduction approach*. New York: Guilford.
- Dirienzo, A. G. (2000). Using urn models for the design of clinical trials. *The Indian Journal of Statistics, 62*, 43-69.
- Donovan, J. E., Jessor, R., & Jessor, L. (1983). Problem drinking in adolescence and young adulthood: A follow-up study. *Journal of Studies on Alcohol, 44*, 109-137.
- Earleywine, M., LaBrie, J. W., & Pedersen, E. R. (2008). A brief Rutgers Alcohol Problem Index with less potential for bias. *Addictive Behaviors, 33*, 1249-1253. doi: 10.1016/j.addbeh.2008.05.006
- Engs, R. C., Diebold, B. A., & Hansen, D. J. (1996). The drinking patterns and problems of a national sample of college students, 1994. *Journal of Alcohol and Drug Education, 4*, 13-33.
- Epp, S. (2008). The value of reflective journaling in undergraduate nursing education: A literature review. *International Journal of Nursing Studies, 45*, 1379-1388.
- Erickson, D. J., Smolenski, D. J., Toomey, T. L., Carlin, B. P., Wagenaar, A. C. (2013). Do alcohol compliance checks decrease underage sales at neighboring establishments? *Journal of Studies on Alcohol and Drugs, 74*, 852-858.
- Fachini, A., Aliane, P. P., Martinez, E. Z., & Furtado, E. F. (2012). Efficacy of Brief Alcohol Screening Intervention for College Students (BASICS): A meta-analysis of randomized controlled trials. *Substance Abuse Treatment, Prevention, and Policy, 7*. doi: 10.1186/1747-597X-7-40
- Fillmore, K. M. (1988). *Alcohol Use across the Life Course: A Critical Review of 70 Years of International Longitudinal Research*. Toronto: Addiction Research Foundation.
- First, M. B., Spitzer, R. L., Gibbon, M., & Williams, J. B. W. (2002). *Structured Clinical Interview for DSM-IV-TR Axis I Disorders, Research Version, Patient Edition (SCID-I/P)*. New York: Biometrics Research, New York State Psychiatric Institute.
- Fratraroli, J. (2006). Experimental Disclosure and its moderators: A meta-analysis. *Psychological Bulletin, 132*, 823-865. doi: 10.1037/0033-2909.132.6.823
- Fromme, K., & Corbin, W. R. (2004). Prevention of heavy drinking and associated negative consequences among mandated and voluntary college students. *Journal of Consulting and Clinical Psychology, 72*, 1038-1049. doi: 10.1037/0022-006X.72.6.1038
- Fromme, K., Marlatt, G. A., Baer, J. S., & Kivlahan, D. R. (1994). The Alcohol Skills Training Program: A group intervention for young adult drinkers. *Journal of Substance Abuse Treatment, 11*, 143-154. doi: 10.1016/0740-5472(94)90032-9

- Gallagher, S. M., Penn, P. E., Brooks, A. J., & Feldman, J. (2006). Comparing the CAAPE, a new assessment tool for co-occurring disorders, with the SCID. *Psychiatric Rehabilitation Journal, 30*, 63-65.
- Garvin, R. B., Alcorn, J. D., & Faulkner, K. K. (1990). Behavioral strategies for alcohol abuse prevention with high risk college males. *Journal of Alcohol and Drug Education, 36*, 23-34.
- George, W. H., Gilmore, A. K., & Stappenbeck, C. A. (2012). Balanced placebo design: Revolutionary impact on addictions research and theory. *Addiction Research & Theory, 20*, 186-203. doi: 10.3109/16066359.2012.680216
- Ginzler, J. A., Garrett, S. B., Baer, J. S., & Peterson, P. L. (2007). Measurement of negative consequences of substance use in street youth: An expanded use of the Rutgers Alcohol Problem Index. *Addictive Behaviors, 32*, 1519-1525. doi: 10.1016/j.addbeh.2006.11.004
- Gwaltney, C. J., Bartolomei, R., Colby, S. M., & Kahler, C. W. (2008). Ecological momentary assessment of adolescent smoking cessation: A feasibility study. *Nicotine & Tobacco Research, 10*, 1185-1190. doi: 1080/14622200802163118
- Gwaltney, C. J., Shields, A. L., & Shiffman, S. (2008). Equivalence of electronic and paper-and-pencil administration of patient-reported outcome measures: A meta-analytic review. *Value in Health, 11*, 322-333. doi: 10.1111/j.1524-4733.2007.00231.x
- Harvey, A. G., & Farrell, C. (2003). The efficacy of a Pennebaker-like writing intervention for poor sleepers. *Behavioral Sleep Medicine, 1*, 115-124. doi: 10.1207/S15402010BSM0102\_4
- Heather, N., Whitton, B., & Robertson, I. (1986). Evaluation of a self-help manual for media-recruited problem drinkers: Six month follow-up results. *British Journal of Clinical Psychology, 25*, 19-34. doi: 10.1111/j.2044-8260.1986.tb00667.x
- Health Foundation. (2011). *Research scan: Training professionals in motivational interviewing*. London: Health Foundation. Retrieved from [www.health.org.uk](http://www.health.org.uk)
- Hingson, R., Heeren, T., Winter, M., & Wechsler, H. (2005). Magnitude of alcohol-related mortality and morbidity among U.S. college students ages 18-24: Changes from 1998 to 2001. *Annual Review of Public Health, 26*, 259-279. doi: 10.1146/annurev.publhealth.26.021304.144652
- Hingson, R. W., Heeren, T., Zakocs, R. C., Kopstein, A., & Wechsler, H. (2002). Magnitude of alcohol-related mortality and morbidity among U.S. college students ages 18-24. *Journal of Studies on Alcohol, 63*, 136-144.

- Hingson, R. W., Zha, W., & Weitzman, E. R. (2009). Magnitude of and trends in alcohol-related mortality and morbidity among U.S. college students ages 18-24, 1998-2005. *Journal of Studies on Alcohol and Drugs*, (Supplement No. 16), 12-20.
- Hoover, E. (2005). For the 12th straight year, arrests for alcohol rise on college campuses. *The Chronicle of Higher Education*, 51, A31.
- Hull, J. G., & Bond, C. F. (1986). Social and behavioral consequences of alcohol consumption and expectancy: A meta-analysis. *Psychological Bulletin*, 99, 347-360. doi: 10.1037/0033-2909.99.3.347
- Johnstone, B. M., Leino, E. V., Ager, C. R., Ferrer, H., & Fillmore, K. M. (1996). Determinants of life-course variation in the frequency of alcohol consumption: Meta-analysis of studies from the Collaborative Alcohol-Related Longitudinal Project. *Journal of Studies on Alcohol*, 57, 494-506.
- Jordan, B. K., Karg, R. S., Batts, K. R., Epstein, J. F., & Wiesen, C. (2008). A clinical validation of the National Survey on Drug Use and Health assessment of substance use disorders. *Addictive Behaviors*, 33, 782-798. doi: 10.1016/j.addbeh.2007.12.007
- Kivlahan, D. R., Coppel, D. B., Fromme, K., Miller, E., & Marlatt, G. A. (1990). Secondary prevention of alcohol-related problems in young adults at risk. In K. D. Craig & S. M. Weiss (Eds.), *Health enhancement, disease prevention, & early intervention* (pp. 287-300). New York: Springer.
- Knight, J. R., Wechsler, H., Kuo, M., Seibring, M., Weitzman, E. R., & Schuckit, M. A. (2002). Alcohol abuse and dependence among U.S. college students. *Journal of Studies on Alcohol*, 63, 263-270.
- Kruse, M. I., Corbin, W. R., & Fromme, K. (2005, June). *Improving accuracy of QF measures of alcohol use: Disaggregating quantity and frequency*. Poster session presented at the 28th annual meeting of the Research Society on Alcoholism, Santa Barbara, CA.
- Kulesza, M., Apperson, M., Larimer, M. E. & Copeland, A. L. (2010). Brief alcohol intervention for college drinkers: How brief is? *Addictive Behaviors*, 35, 730-733. doi: 10.1016/j.addbeh.2010.03.011
- Larimer, M. E., & Cronce, J. M. (2002). Identification, prevention and treatment: a review of individual-focused strategies to reduce problematic alcohol consumption by college students. *Journal of Studies on Alcohol*, (Supplement No. 14), 148-163.
- Larimer, M. E., & Cronce, J. M. (2007). Identification, prevention, and treatment revisited: Individual-focused college drinking prevention strategies 1999-2006. *Addictive Behaviors*, 32, 2439-2468. doi:10.1016/j.addbeh.2007.05.006

- Larimer, M. E., Turner, A. P., Mallett, K. A., & Geisner, I. M. (2004). Predicting drinking behavior and alcohol-related problems among fraternity and sorority members: Examining the role of descriptive and injunctive norms. *Psychology of Addictive Behaviors, 18*, 203-212. doi: 10.1037/0893-164X.18.3.203
- Leonard, K. E., & Rothbard, J. C. (1999). Alcohol and the marriage effect. *Journal of Studies on Alcohol*, (Supplement No. 13), 139-146.
- Levy, B., & Earleywine, M. (2003). Reinforcement expectancies for studying predict drinking problems among college students: Approaching problem drinking from an expectancies choice perspective. *Addictive Behaviors, 28*, 551-559. doi: 10.1016/S0306-4603(01)00250-7
- Lewis, M. A., & Neighbors, C. (2004). Gender-specific misperceptions of college student drinking norms. *Psychology of Addictive Behaviors, 18*, 334-339. doi: 10.1037/0893-164x.18.4.334
- Lintonen, T. P., Vartiainen, H., Aarnio, J., Hakamaaki, S., Viitanen, P., Wuolijoki, T., et al. (2011). Drug use among prisoners: By any definition, it's a big problem. *Substance Use & Misuse, 46*, 440-451. doi: 10.3109/10826081003682271
- Loudenburg, R. (2008). *South Dakota Public Safety DUI Program: Four Year Evaluation Report*. Office of Highway Safety, South Dakota Department of Public Safety. Pierre, SD.
- Marlatt, G. A., Baer, J. S., Kivlahan, D. R., Dimeff, L. A., Larimer, M. E., Quigley, L. A., et al. (1998). Screening and brief intervention for high-risk college student drinkers: Results from a 2-year follow-up assessment. *Journal of Consulting and Clinical Psychology, 66*, 604-615. doi: 10.1037/0022-006X.66.4.604
- Marlatt, G. A., Demming, B., & Reid, J. B. (1973). Loss of control drinking in alcoholics: An experimental analogue. *Journal of Abnormal Psychology, 81*, 233-241.
- Marlatt, G. A., & Gordon, J. R. (1985). *Relapse prevention: Maintenance strategies in the treatment of addictive behaviors*. New York: Guilford Press.
- Marlatt, G. A., & Parks, G. A. (2010). *CHOICES about Alcohol: A Brief Alcohol Abuse Prevention Program*. Carson City, NV: The Change Companies.
- Martens, M. P., Page, J. C., Mowry, E. S., Damann, K. M., Taylor, K. K., & Cimini, M. D. (2006). Differences between actual and perceived student norms: An examination of alcohol use, drug use, and sexual behavior. *Journal of American College Health, 54*, 295-300. doi: 10.3200/JACH.54.5.295-300

- Martin, C. S., Pollock, N. K., Bukstein, O. G., & Lynch, K. G. (2000). Inter-rater reliability of the SCID alcohol and substance use disorders section among adolescents. *Drug and Alcohol Dependence, 59*, 173-176. doi: 10.1016/S0376-8716(99)00119-2
- Matthews, D. B., & Miller, W. R. (1979). Estimating blood alcohol concentration: Two computer programs and their applications in therapy and research. *Addictive Behaviors, 4*, 55-60. doi: 10.1016/0306-4603(79)90021-2
- Merline, A. C., O'Malley, P. M., Schulenberg, J. E., Bachman, J. E., & Johnston, L. D. (2004). Substance Use among Adults 35 Years of Age: Prevalence, Adulthood Predictors, and Impact of Adolescent Substance Use. *American Journal of Public Health, 94*, 96-102. doi: 10.2105/AJPH.94.1.96
- Merrill, J. E., Carey, K. B., Reid, A. E., & Carey, M. P. (2013). Drinking reductions following alcohol-related sanctions are associated with social norms among college students. *Psychology of Addictive Behaviors*. Advance online publication. doi: 10.1037/a0034743
- Messina, N., Calhoun, S., & Warda, U. (2012). Gender-responsive drug court treatment: A randomized controlled trial. *Criminal Justice and Behavior, 39*, 1539-1558. doi: 10.1177/0093854812453913
- Miller, E. T., Kilmer, J. R., Kim, E. L., Weingardt, K. R., & Marlatt, G. A. (2001). Alcohol skills training for college students. In P. M. Monti, S. M. Colby, & T. A. O'Leary (Eds.), *Adolescents, Alcohol, and Substance Abuse: Reaching Teens through Brief Interventions* (pp. 183-215). New York: Guilford Press.
- Miller, W. R., & Marlatt, G. A. (1984). *Brief Drinker Profile*. Odessa, FL: Psychological Assessment Resources.
- Miller, E. T., Neal, D. J., Roberts, L. J., Baer, J. S., Cressler, S. O., Metrik, J., et al. (2002). Test-retest reliability of alcohol measures: Is there a difference between internet-based assessment and traditional methods? *Psychology of Addictive Behaviors, 16*, 56-63. doi: 10.1037/0893-164X.16.1.56
- Miller, W. R., & Rollnick, S. (1991). *Motivational interviewing: Preparing people to change addictive behavior*. New York: Guilford Press.
- Miller, W. R., & Taylor, C.A. (1980). Relative effectiveness at bibliotherapy, individual and group self-control training in the treatment of problem drinkers. *Addictive Behaviors, 5*, 13-24. doi: 10.1016/0306-4603(80)90017-9
- Miller, W. R., Zweben, A., DiClemente, C. C., & Rychtarik, R. G. (1995). *Motivational Enhancement Therapy (MET) manual* (Vol. 2). Project MATCH Monograph Series. Rockville, MD: National Institute on Alcohol Abuse and Alcoholism.

- Murphy, J. G., Duchnick, J. J., Vuchinich, R. E., Davison, J. W., Karg, R. S., Olson, A. M., et al. (2001). Relative efficacy of a brief motivational intervention for college student drinkers. *Psychology of Addictive Behaviors, 15*, 373-379. doi: 10.1037//0893-164X.15.4.373
- National Institute on Alcohol Abuse and Alcoholism. (2002). *A call to action: Changing the culture of drinking at U.S. colleges*. U.S. Department of Health and Human Services, National Institutes of Health, National Advisory Council on Alcohol Abuse and Alcoholism, Task Force on College Drinking. Bethesda, MD: NIAAA.
- Neighbors, C., Lee, C. M., Lewis, M. A., Fossos, N., & Larimer, M. E. (2007). Are social norms the best predictor of outcomes among heavy-drinking college students? *Journal of Studies on Alcohol and Drugs, 68*, 556-565.
- Neighbors, C., O'Connor, R. M., Lewis, M. A., Chawla, N., Lee, C. M., & Fossos, N. (2008). The relative impact of injunctive norms on college student drinking: The role of reference group. *Psychology of Addictive Behaviors, 22*, 576-581. doi: 10.1037/a0013043
- O'Connell, M. E., Boat, T., & Warner, K. E. (2009). *Preventing mental, emotional, and behavioral disorders among young people: Progress and possibilities*. National Research Council and Institute of Medicine of the National Academies. Washington, D.C.: The National Academies Press.
- O'Malley, P. M. (2005). Maturing out of problematic alcohol use. *Alcohol Research & Health, 28*, 202-204.
- Pachankis, J. E., & Goldfried, M. R. (2010). Expressive writing for gay-related stress: Psychosocial benefits and mechanisms underlying improvement. *Journal of Consulting and Clinical Psychology, 78*, 98-110. doi: 10.1037/a0017580
- Palmer, R. S., Kilmer, J. R., Ball, S. A., & Larimer, M. E. (2010). Intervention defensiveness as a moderator of drinking outcome among heavy-drinking mandated college students. *Addictive Behaviors, 35*, 1157-1160. doi: 10.1016/j.addbeh.2010.08.009
- Parks, G. A. (2012). Motivational Interviewing Observational Checklist. Retrieved from [www.eiu.edu/ihec/MI\\_Checklist\\_2-Way.pdf](http://www.eiu.edu/ihec/MI_Checklist_2-Way.pdf)
- Parks, G. A., & Woodford, M. S. (2005). CHOICES about Alcohol: A Brief Alcohol Abuse Prevention and Harm Reduction Program for College Students. In G. R. Walz & R. K. Yep (Eds.) *VISTAS: Compelling Perspectives on Counseling 2005*. Alexandria, VA: American Counseling Association.
- Perkins, H. W., Meilman, P. W., Leichliter, J. S., Cashin, J. R., & Presley, C. A. (1999). Misperceptions of the norms for frequency of alcohol and other drug use on college campuses. *Journal of American College Health, 47*, 253-258.

- Porter, J. R. (2006, October 18). Campus arrests for drinking and other offenses jumped sharply in 2004, data show. *The Chronicle of Higher Education*. Retrieved from <http://chronicle.com.libezp.lib.lsu.edu>
- Prochaska, J. O., & Velicer, W.F. (1997). The transtheoretical model of health behavior change. *American Journal of Health Promotion, 12*, 38-48. doi: 10.4278/0890-1171-12.1.38
- Proctor, S. L., Hoffmann, N. G., & Allison, S. (2012). The effectiveness of Interactive Journaling in reducing recidivism among substance-dependent jail inmates. *International Journal of Offender Therapy and Comparative Criminology, 56*, 317–332. doi: 10.1177/0306624X11399274
- Project MATCH Research Group. (1993). Project MATCH: Rationale and methods for a multisite clinical trial matching patients to alcoholism treatment. *Alcoholism: Clinical and Experimental Research, 17*, 1130-1145.
- Rollnick, S. (1998). Readiness, importance and confidence: Critical conditions of change in treatment (pp. 49-60). In W. R. Miller & N. Heather (Eds.), *Treating addictive behaviors (2<sup>nd</sup> ed.)*. New York: Plenum Press.
- Rollnick, S., Heather, N., & Bell, A. (1992). Negotiating behaviour change in medical settings: The development of brief motivational interviewing. *Journal of Mental Health, 1*, 25-37.
- Sadler, O. W., & Scott, M. A. (1993). First offenders: A systematic response to underage drinking on the college campus. *Journal of Alcohol and Drug Education, 38*, 62-71.
- Selzer, M. L. (1971). The Michigan Alcoholism Screening Test: The quest for a new diagnostic instrument. *American Journal of Psychiatry, 127*, 1653-1658.
- Sher, K. J., & Gotham, H. J. (1999). Pathological alcohol involvement: A developmental disorder of young adulthood. *Development and Psychopathology, 11*, 933-956. doi: 10.1017/S0954579499002394
- Skinner, H. A., & Allen, B. A. (1982). Alcohol dependence syndrome: measurement and validation. *Journal of Abnormal Psychology, 91*, 199-209. doi: 10.1037/0021-843X.91.3.199
- Sobell, L. C., & Sobell, M. B. (1973). A self-feedback technique to monitor drinking behavior in alcoholics. *Behaviour Research & Therapy, 11*, 237-238. doi: 10.1016/S0005-7967(73)80014-2
- Staulcup, H. J., & Barth, R. P. (1984). A reflective approach to alcohol prevention with adolescents. *Journal of Primary Prevention, 4*, 163-172.
- Stone, M. (1998). Journaling with clients. *Journal of Individual Psychology, 54*, 535-545.

- Stout, R. L., Wirtz, P. W., Carbonari, J. P., & Del Boca, F. K. (1994). Ensuring balanced distribution of prognostic factors in treatment outcome research. *Journal of Studies on Alcohol*, (Supplement No. 12), 70-75.
- Slutske, W. S. (2005). Alcohol use disorders among US college students and their non-college-attending peers. *Archives of General Psychiatry*, 62, 321-327. doi:10.1001/archpsyc.62.3.321
- Substance Abuse and Mental Health Services Administration. (2008). *Brief Alcohol Screening and Intervention for College Students (BASICS)*. National Registry of Evidence-based Programs and Practices. Retrieved from <http://www.nrepp.samhsa.gov>
- Substance Abuse and Mental Health Services Administration. (2012). *Results from the 2011 National Survey on Drug Use and Health: Summary of National Findings* (Office of Applied Studies, NSDUH Series H-44, HHS Publication No. SMA 12-4713). Rockville, MD.
- Substance Abuse and Mental Health Services Administration. (2014). *Interactive Journaling*. National Registry of Evidenced-based Programs and Practices. Retrieved from <http://www.nrepp.samhsa.gov>
- Sussman, S. (2012). Alcohol use policies that restrict alcohol use. *Substance Use & Misuse*, 47, 1250-1251. doi: 10.3109/10826084.2012.720538
- Terlecki, M. A., Larimer, M. E., & Copeland, A. L. (2010). Clinical outcomes of a brief motivational intervention for heavy drinking mandated college students: A pilot study. *Journal of Studies on Alcohol and Drugs*, 71, 54-60.
- Wagenaar, A. C., Toomey, T. L. (2002). Effects of minimum drinking age laws: Review and analyses of the literature from 1960 to 2000. *Journal of Studies on Alcohol (Supplement)*, 14, 206-225.
- Walters, S. T., & Bennett, M. E. (2000). Addressing drinking among college students: A review of the empirical literature. *Alcoholism Treatment Quarterly*, 18, 61-77. doi: 10.1300/J020v18n01\_04
- Wechsler, H., Lee, J. E., Kuo, M., Seibring, M., Nelson, T. F., & Lee, H. P. (2002). Trends in college binge drinking during a period of increased prevention efforts: Findings from four Harvard School of Public Health study surveys, 1993-2001. *Journal of American College Health*, 50, 203-217.
- Wechsler, H., Lee, J. E., Nelson, T. F., & Kuo, M. (2002). Underage college students' drinking behavior, access to alcohol, and the influence of deterrence policies. *Journal of American College Health*, 50, 223-236.



- Wei, L. J. (1978). An application of an urn model to the design of sequential controlled clinical trials. *Journal of the American Statistical Association*, *73*, 559-563.
- Wei, L. J., & Lachin, J. M. (1988). Properties of the urn randomization in clinical trials. *Controlled Clinical Trials*, *9*, 345-364.
- Weingardt, K. R., Baer, J. S., Kivlahan, D. R., Roberts, L. J., Miller, E. T., & Marlatt, G. A. (1998). Episodic heavy drinking among college students: Methodological issues and longitudinal perspectives. *Psychology of Addictive Behaviors*, *12*, 155-167. doi: 10.1037/0893-164X.12.3.155
- Weitzman, E. R., & Nelson, T. F. (2004). College student binge drinking and the “prevention paradox”: Implications for prevention and harm reduction. *Journal of Drug Education*, *34*, 247-266.
- White, H. R., Filstead, W. J., Labouvie, E. W., Conlin, J., & Pandina, R. J. (1988). Assessing alcohol problems in clinical and nonclinical adolescent populations. *Alcoholism: Clinical and Experimental Research*, *12*, 328.
- White, H. R., & Labouvie, E. W. (1989). Toward the assessment of adolescent problem drinking. *Journal of Studies on Alcohol*, *50*, 30-37.
- White, H. R., Labouvie, E. W., & Papadaratsakis, V. (2005). Changes in substance use during the transition to adulthood: A comparison of college students and their noncollege age peers. *Journal of Drug Issues*, *35*, 281-305. doi: 10.1177/002204260503500204
- White, H. R., Mun, E. Y., Pugh, L., & Morgan, T. J. (2007). Long-term effects of brief substance use interventions for mandated college students: Sleeper effects of an in-person personal feedback intervention. *Alcoholism: Clinical and Experimental Research*, *31*, 1380-1391.
- Wood, M. D., Capone, C., Laforge, R., Erickson, D. J., & Brand, N. H. (2007). Brief motivational intervention and alcohol expectancy challenge with heavy drinking college students: A randomized factorial study. *Addictive Behaviors*, *32*, 2509-2528. doi: 10.1016/j.addbeh.2007.06.018
- Zyromski, B. (2007). Journaling: An underutilized school counseling tool. *Journal of School Counseling*, *5*. Retrieved from <http://www.jsc.montana.edu>

## APPENDIX A: RUTGERS ALCOHOL PROBLEM INDEX

INSTRUCTIONS: Different things happen to people while they are drinking ALCOHOL or as a result of their ALCOHOL use. Some of these things are listed below. Please indicate how many times each has happened to you during the last month while you were drinking alcohol or as the result of your alcohol use.

How many times did the following things happen to you while you were drinking alcohol or because of your alcohol use during the last three years?

- |  |       |           |           |            |                    |
|--|-------|-----------|-----------|------------|--------------------|
| 1. Not able to do your homework or study for a test.   | 0     | 1         | 2         | 3          | 4                  |
|  | Never | 1-2 times | 3-5 times | 6-10 times | More than 10 times |
| 2. Got into fights, acted badly, or did mean things.   | 0     | 1         | 2         | 3          | 4                  |
|  | Never | 1-2 times | 3-5 times | 6-10 times | More than 10 times |
| 3. Missed out on other things because you spent too much money on alcohol.                               | 0     | 1         | 2         | 3          | 4                  |
|  | Never | 1-2 times | 3-5 times | 6-10 times | More than 10 times |
| 4. Went to work or school high or drunk  | 0     | 1         | 2         | 3          | 4                  |
|  | Never | 1-2 times | 3-5 times | 6-10 times | More than 10 times |
| 5. Caused shame or embarrassment to someone.   | 0     | 1         | 2         | 3          | 4                  |
|  | Never | 1-2 times | 3-5 times | 6-10 times | More than 10 times |
| 6. Neglected your responsibilities.  | 0     | 1         | 2         | 3          | 4                  |
|  | Never | 1-2 times | 3-5 times | 6-10 times | More than 10 times |
| 7. Relatives avoided you.  | 0     | 1         | 2         | 3          | 4                  |
|  | Never | 1-2 times | 3-5 times | 6-10 times | More than 10 times |
| 8. Felt that you needed more alcohol than you used to use in order to get the same effect.               | 0     | 1         | 2         | 3          | 4                  |
|  | Never | 1-2 times | 3-5 times | 6-10 times | More than 10 times |
| 9. Tried to control your drinking by trying to drink only at certain times of the day at certain places. | 0     | 1         | 2         | 3          | 4                  |
|  | Never | 1-2 times | 3-5 times | 6-10 times | More than 10 times |
| 10. Had withdrawal symptoms, that is, felt sick because you stopped or cut down on drinking.             | 0     | 1         | 2         | 3          | 4                  |
|  | Never | 1-2 times | 3-5 times | 6-10 times | More than 10 times |

11. Noticed a change in your personality.
- |       |           |           |            |                    |
|-------|-----------|-----------|------------|--------------------|
| 0     | 1         | 2         | 3          | 4                  |
| Never | 1-2 times | 3-5 times | 6-10 times | More than 10 times |
12. Felt that you had a problem with alcohol.
- |       |           |           |            |                    |
|-------|-----------|-----------|------------|--------------------|
| 0     | 1         | 2         | 3          | 4                  |
| Never | 1-2 times | 3-5 times | 6-10 times | More than 10 times |
13. Missed a day (or part of a day) of school or work.
- |       |           |           |            |                    |
|-------|-----------|-----------|------------|--------------------|
| 0     | 1         | 2         | 3          | 4                  |
| Never | 1-2 times | 3-5 times | 6-10 times | More than 10 times |
14. Tried to cut down or quit drinking.
- |       |           |           |            |                    |
|-------|-----------|-----------|------------|--------------------|
| 0     | 1         | 2         | 3          | 4                  |
| Never | 1-2 times | 3-5 times | 6-10 times | More than 10 times |
15. Suddenly found yourself in a place that you could not remember getting to.
- |       |           |           |            |                    |
|-------|-----------|-----------|------------|--------------------|
| 0     | 1         | 2         | 3          | 4                  |
| Never | 1-2 times | 3-5 times | 6-10 times | More than 10 times |
16. Passed out or fainted suddenly.
- |       |           |           |            |                    |
|-------|-----------|-----------|------------|--------------------|
| 0     | 1         | 2         | 3          | 4                  |
| Never | 1-2 times | 3-5 times | 6-10 times | More than 10 times |
17. Had a fight, argument or bad feelings with a friend.
- |       |           |           |            |                    |
|-------|-----------|-----------|------------|--------------------|
| 0     | 1         | 2         | 3          | 4                  |
| Never | 1-2 times | 3-5 times | 6-10 times | More than 10 times |
18. Had a fight, argument or a bad feeling with a family member.
- |       |           |           |            |                    |
|-------|-----------|-----------|------------|--------------------|
| 0     | 1         | 2         | 3          | 4                  |
| Never | 1-2 times | 3-5 times | 6-10 times | More than 10 times |
19. Kept drinking when you promised yourself not to.
- |       |           |           |            |                    |
|-------|-----------|-----------|------------|--------------------|
| 0     | 1         | 2         | 3          | 4                  |
| Never | 1-2 times | 3-5 times | 6-10 times | More than 10 times |
20. Felt you were going crazy.
- |       |           |           |            |                    |
|-------|-----------|-----------|------------|--------------------|
| 0     | 1         | 2         | 3          | 4                  |
| Never | 1-2 times | 3-5 times | 6-10 times | More than 10 times |
21. Had a bad time.
- |       |           |           |            |                    |
|-------|-----------|-----------|------------|--------------------|
| 0     | 1         | 2         | 3          | 4                  |
| Never | 1-2 times | 3-5 times | 6-10 times | More than 10 times |
22. Felt physically or psychologically dependent on alcohol.
- |       |           |           |            |                    |
|-------|-----------|-----------|------------|--------------------|
| 0     | 1         | 2         | 3          | 4                  |
| Never | 1-2 times | 3-5 times | 6-10 times | More than 10 times |
23. Was told by a friend or a neighbor to stop or cut down on drinking.
- |       |           |           |            |                    |
|-------|-----------|-----------|------------|--------------------|
| 0     | 1         | 2         | 3          | 4                  |
| Never | 1-2 times | 3-5 times | 6-10 times | More than 10 times |



## APPENDIX C: PROGRAM EVALUATION QUESTIONNAIRE

1. How understandable was the CHOICES program?  
0                      1                      2                      3  
Not at all              Somewhat              Very                      Extremely
  
2. How helpful do you think the CHOICES program will be in changing your future drinking behavior?  
0                      1                      2                      3  
Not at all              Somewhat              Very                      Extremely
  
3. How helpful do you think the CHOICES program will be in changing your future general lifestyle behaviors?  
0                      1                      2                      3  
Not at all              Somewhat              Very                      Extremely
  
4. How likely would you be to recommend the CHOICES program to others?  
0                      1                      2                      3  
Not at all              Somewhat              Very                      Extremely
  
5. How likely are you to keep the CHOICES Interactive Journal following completion of the program?  
0                      1                      2                      3  
Not at all              Somewhat              Very                      Extremely

## APPENDIX D: CONSENT FORM

### *Consent for Initial Assessment, Brief Intervention, Post-Test, and Follow-ups*

- Study Title:*** Brief Alcohol Intervention for Heavy Drinking Mandated College Students
- Performance Sites:*** This study will be conducted at the Louisiana State University Psychological Services Center (PSC), 33 Johnston Hall.
- Contacts:*** The Principal Investigator, Amy L. Copeland, Ph.D., can be reached at 225-578-4117, Monday-Friday between 9:00 a.m. and 5:00 p.m. Additional research staff can be contacted at 225-578-1494, M-Th between 8:00 a.m. and 8:00 p.m. and Friday between 8:00 a.m. and 4:30 p.m.
- Purpose of the Study:*** The proposed study is designed to contribute to the existing literature on alcohol use in college students. We are evaluating self-report measures of alcohol use, negative consequences, and readiness to change in mandated and never-mandated heavy college student drinkers before and after a brief alcohol intervention.
- Subjects:***
- Inclusion Criteria*** In order to participate in the study, participants must be referred to college or community officials for violating the campus alcohol policy or volunteer for participation from a research study pool at the Department of Psychology or campus recruitment and a) report drinking at least monthly and consume at least 5-6 drinks on one occasion in the past month; or b) endorse three alcohol-related problems on 3 to 5 occasions in the past 3 years; c) can provide a voluntary informed consent; d) age 18-24.
- Exclusion Criteria*** Students who do not meet the above criteria will be excluded from participation. In addition, students who have had multiple disciplinary referrals related to alcohol or drug use, request more intensive treatment for drug or alcohol problems, report a history of severe and persistent alcohol or drug-related symptoms including physiological dependence, and primarily use other substances will not be included in the sample and will be referred to appropriate treatment as necessary.
- Number*** The maximum number of subjects enrolled in this study will be 465.
- Study Procedures:*** The study requires that you attend a single 90-minute appointment. The appointment will take place at the LSU's Psychological Services Center (PSC), 33 Johnston Hall. During the appointment you will meet with a clinician who will ask you questions about your family, social,

educational, and alcohol/drug use history. You will also complete a series of self-report assessments about your alcohol and drug use. Four weeks after completing the appointment, you will be asked to complete a brief series of self-report measures on your alcohol use.

If you agree to participate in this study, the following will occur:

- 1.) You will be randomly (by chance) assigned to receive the intervention during the appointment (*immediate intervention group*) or after about 4 weeks (*wait-list control group*).
- 2.) **Appointment:** You will be asked to come to the PSC for the assessment interview where you will meet with a clinician for approximately 90 minutes. The clinician will ask you questions including your personal and family history of alcohol and drug use. You will be asked to complete self-report measures that assess your perceptions of alcohol use among your peers and alcohol expectancies (beliefs about alcohol's effects).
- 3.) If you were assigned to the *immediate intervention group*, you will be asked to complete a brief alcohol intervention. If you were assigned to the *wait-list control group*, you will be asked to return to the PSC in approximately 4 weeks to complete the brief alcohol intervention.
- 4.) **Post-test:** You will be asked to complete a brief series of post-test measures (10-15 min) approximately 4 weeks after the appointment.
- 5.) **Follow-up:** All experimental groups will be asked to complete a brief series of self-report measures (10-15 min) at the following time periods: 3 months, 6 months, 12 months, and 24 months.
- 6.) Due to the length of the study and to ensure that we will be able to reach you, we will ask you to fill out a locator form with 5 different and reliable ways to contact you.

***Benefits:*** You will be contributing to our knowledge regarding alcohol and substance use that may help other alcohol and substance users in the future. In most cases, your study participation will fulfill your disciplinary requirements.

***Risks/Discomforts:*** Possible loss of confidentiality. You might feel uncomfortable disclosing and discussing personal information.

***Measures taken to reduce risk:*** Study participation is voluntary. All personal information obtained in this study will be kept confidential unless release is legally compelled (i.e., a court ordered subpoena). To help keep information about you confidential, we have applied for a Certificate of Confidentiality from the Department of Health and Human Services (DHHS). The Certificate of Confidentiality will protect the investigators from being forced, in

cases such as a court order or subpoena, to tell anyone that is not connected with this study about your participation in this study.

Information collected in this study will not be connected in any way to your academic, judicial, or disciplinary record. Referring sources and their staff (e.g., Office of Judicial Affairs, Office of Residential Life) will not have access to identifiable data collected in this study. Data collected in this study will not be used to influence or determine the disciplinary or judicial actions regarding your case.

Once all data have been collected, participant names and phone numbers will be destroyed. During the study, participants will be assigned a random number, and this number will be the only link between their name, phone number, and data. All completed forms/data will be kept in a locked filing cabinet in the Archives Room at the PSC which is kept locked at all times and is accessible only to the PI (also Director of the PSC, PSC staff/therapists). In addition, the data collectors will be trained in confidentiality.

***Right to Refuse:*** Participation in this study is voluntary, and you may withdraw from the study at any time without jeopardizing your academic standing at LSU. If you have violated LSU's alcohol policy and have been referred to a college or community official for disciplinary action, withdrawing from the study will not adversely affect your referral status. We cannot guarantee that your disciplinary requirements will be fulfilled by your participation in the study.

***Privacy:*** Results of this study may be published, but no names or identifying information will be included in the publication. All personal information obtained in this study will be kept confidential unless release is legally compelled. Once all data have been collected, your name and telephone number will be destroyed. During the study, you will be assigned a random number, and this number will be the only link between your name, phone number, and your responses. Your forms will be kept in a locked filing cabinet in a locked office. Only research staff members will have access to data files or other research-related information. The information collected in this research study will not be linked to your academic or judicial records at LSU.

***Financial Information:*** Participants will not be compensated for the assessment interview, feedback interview, or post-test. However, participants will receive compensation via a lottery-style cash and prize drawing for completing follow-up measures. Drawings will be held at 3-, 6-, 12-, and 24-months. In addition, participants who complete all four follow-up measures will be entered into a grand prize drawing.



<b><i>Withdrawal:</i></b>	Participants may withdraw from the study at any time without adversely affecting their relationship with LSU and the research staff.
<b><i>Removal:</i></b>	Aside from obvious disruption, harm, or threat of harm to other study participants or members of the research team, participants will not be dropped from the study.
<b><i>Alternatives:</i></b>	If you do not wish to participate in the present study, we will provide a list of referrals of alternative treatment programs on campus and in the community, but we cannot attest to their efficacy.
<b><i>Unforeseeable Risks:</i></b>	As with any study, confidentiality is a concern, however, confidentiality risk is unlikely given the steps we have taken to ensure that participant-identifying information is kept confidential.
<b><i>Certificate of Confidentiality:</i></b>	The researchers in this study have applied for a Certificate of Confidentiality from the Department of Health and Human Services (DHHS). This certificate will cover all of the data collected in this study. The certificate protects the identities of research participants from any person not connected with the research itself. This protected includes “any civil, criminal, administrative, legislative, or other proceedings whether Federal, State, or local” (quoted from the certificate). The only exception to the confidentiality of the information you provide concerns the sexual or physical abuse of a child or elder, or threatened harm to yourself or others. If the information on current child/elder abuse is given to the researchers, or if there are threats to harm yourself or others, the researchers are required to report this to the authorities. The obligation to report includes alleged or probable abuse as well as known abuse. Except for these requirements, the Certificate of Confidentiality means that the information provided by you cannot be used in any criminal or legal proceedings.
<b><i>Study-associated injury or illness:</i></b>	If you are experiencing medical problems that appear to be more serious than typical, acute alcohol withdrawal, you will be instructed to seek the advice of your physician.
<b><i>Study-related illness or injury:</i></b>	Participants are instructed to seek necessary medical care from their physician and contact the Principal Investigator, Dr. Amy Copeland (578-4117) in the event of a study-related illness or injury.
<b><i>New Findings:</i></b>	Any significant new findings developed from the study data or independent sources during the course of research which may influence your willingness to continue in the study will be explained to you.
<b><i>Signatures:</i></b>	<i>“The study has been discussed with me and all my questions have been answered. I may direct additional questions regarding study specifics to</i>

*the investigators. If I have questions about subjects' rights or other concerns, I can contact Robert C. Mathews, Chairmen, LSU Institutional Review Board, (225) 578-8692. I agree to participate in the study described above and acknowledge the researchers' obligation to provide me with a copy of this consent form if signed by me."*

---

Participant Signature

---

Date

---

Witness Signature

---

Date

APPENDIX E: IRB APPROVAL

Project Report and Continuation Application

(Complete and return to IRB, 130 David Boyd Hall. Direct questions to IRB Chairman Robert Mathews 578-8692.)



Institutional Review Board
Dr. Robert Mathews, Chair
130 David Boyd Hall
Baton Rouge, LA 70803
P: 225.578.8692
F: 225.578.5983
irb@lsu.edu | lsu.edu/irb

IRB#: 2681 Your Current Approval Expires On: 1/30/2014

Review type: Expedited Risk Factor: Minimal Date Sent: 11/1/2013

PI: Amy Copeland Dept: Psychology Phone: (225) 578-4117

Student/Co-Investigator: Proctor Steven

Project Title: Brief Alcohol Intervention for Heavy Drinking Mandated College Students

Number of Subjects Authorized: 500

Please read the entire application. Missing information will delay approval!

I. PROJECT FUNDED BY: Network Addressing Collegiate Alcohol and Other Drug issues LSU proposal #: 32395

II. PROJECT STATUS: Check the appropriate blank(s); and complete the following:

- 1. Active, subject enrollment continuing; # subjects enrolled:
2. Active, subject enrollment complete; # subjects enrolled:
3. Active, subject enrollment complete; work with subjects continues.
4. Active, work with subjects complete; data analysis in progress.
5. Project start postponed
6. Project complete; end date
7. Project cancelled: no human subjects used.

III. PROTOCOL: (Check one).

- Protocol continues as previously approved
Changes are requested\*
List (on separate sheet) any changes to approved protocol.

IV. UNEXPECTED PROBLEMS: (did anything occur that increased risks to participants):

- State number of events since study inception since last report.
If such events occurred, describe them and how they affect risks in your study, in an attached report.
Have there been any previously unreported events? Y/N? (if YES, attach report describing event and any corrective action).

V. CONSENT FORM AND RISK/BENEFIT RATIO:

Does new knowledge or adverse events change the risk/benefit ratio? Y/N;
Is a corresponding change in the consent form needed? Y/N

VI. ATTACH A BRIEF, FACTUAL SUMMARY of project progress/results to show continued participation of subjects is justified; or to provide a final report on project findings.

VII. ATTACH CURRENT CONSENT FORM (only if subject enrollment is continuing); and check the appropriate blank:

- Form is unchanged since last approved
Approval of revision requested herewith: (identify changes)

Signature of Principal Investigator: [Signature] Date: 1/8/14

IRB Action: Continuation approved; Approval Expires: 1/13/15
Signed: [Signature] Date: 1/14/14

## **VITA**

Steven L. Proctor completed his undergraduate work at Appalachian State University in Boone, North Carolina in 2007 and received his Master of Arts degree in Clinical Psychology from Western Carolina University in Cullowhee, North Carolina in 2009. He will receive his Doctor of Philosophy in Clinical Psychology from the Department of Psychology at Louisiana State University in December 2014.