Screening and Brief Intervention for Hazardous Alcohol Use: A Pilot Study in a College Counseling Center

Danielle Terry Lynnette

Syracuse University

Follow this and additional works at: https://surface.syr.edu/psy_etd

Part of the Clinical Psychology Commons

Recommended Citation

https://surface.syr.edu/psy_etd/170

This Dissertation is brought to you for free and open access by the College of Arts and Sciences at SURFACE. It has been accepted for inclusion in Psychology - Dissertations by an authorized administrator of SURFACE. For more information, please contact surface@syr.edu.
Abstract

In the United States, college drinking has been identified as a public health concern. The pervasive and detrimental use of alcohol on college campuses inspired calls for wider implementation of empirically supported interventions in college settings. Despite strong evidence of the efficacy of brief interventions, no studies have examined the efficacy and feasibility of integrating a screening and brief intervention (SBI) into college mental health services. The aims of the following study were to (a) to determine the feasibility and acceptability of implementation and, (b) to examine the short-term impact of SBI on alcohol use, treatment utilization, client satisfaction, and clinical symptoms. Participants were 35 college students who screened positive for risky alcohol use at a college counseling center. Participants were randomly assigned to a brief intervention for alcohol use or to an information-only control group. Follow-up assessments took place 1 and 2 months post-intervention. Participants in the intervention condition significantly reduced drinks per week 1-month post intervention and perceived stress 2-months post-intervention when compared to controls. All participants showed reductions in peak BAC, heavy drinking episodes, and alcohol related problems at 1 and 2-month follow-up assessments. Process measures revealed that only half of providers referred eligible students despite high ratings of feasibility and acceptability of the program. Future research might examine this intervention with a larger sample as well as barriers to dissemination and recruitment among
staff. This study is a promising first glance at the integration of SBI for alcohol use in a college counseling setting.
Screening and Brief Intervention for Hazardous Alcohol Use:

A Pilot Study in a College Counseling Center

By

Danielle Lynnette Terry

A.A. Mohawk Valley Community College, 2004
B.A. SUNY Institute of Technology, 2005
M.S. Syracuse University, 2008

DISSERTATION

Submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Clinical Psychology in the Graduate School of Syracuse University

August 2012
ACKNOWLEDGEMENTS

Special thanks to Kate B. Carey for her guidance and support in the development, implementation, and analysis of this project. Her expertise, consideration, and thoughtfulness were invaluable and undoubtedly led to the success of this project and many others. Additional thanks to Christopher P. Terry and Robyn L. Fielder for their support. This work was supported by a Syracuse University Department of Psychology Dissertation Award to Danielle L. Terry, M.S. and funding from Kate B. Carey, Ph.D.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>List of Illustrative materials</td>
<td>VII</td>
</tr>
<tr>
<td>Preface</td>
<td>VIII</td>
</tr>
<tr>
<td>Introduction</td>
<td>1</td>
</tr>
<tr>
<td>Access to at risk drinkers in counseling centers</td>
<td></td>
</tr>
<tr>
<td>Purpose of the study</td>
<td></td>
</tr>
<tr>
<td>Method</td>
<td>22</td>
</tr>
<tr>
<td>Overview of design and sample size consideration</td>
<td></td>
</tr>
<tr>
<td>Program implementation</td>
<td></td>
</tr>
<tr>
<td>Participants</td>
<td></td>
</tr>
<tr>
<td>Measures</td>
<td></td>
</tr>
<tr>
<td>Procedures</td>
<td></td>
</tr>
<tr>
<td>Internet security procedures and data management</td>
<td></td>
</tr>
<tr>
<td>Results</td>
<td>46</td>
</tr>
<tr>
<td>Data preparation</td>
<td></td>
</tr>
<tr>
<td>Therapists</td>
<td></td>
</tr>
<tr>
<td>Sample description and baseline comparisons</td>
<td></td>
</tr>
<tr>
<td>Statistical analysis</td>
<td></td>
</tr>
<tr>
<td>Feasibility</td>
<td></td>
</tr>
<tr>
<td>Efficacy of intervention</td>
<td></td>
</tr>
</tbody>
</table>
Secondary outcomes

Exploratory tests of mediation

Additional examination of proposed mediators

Discussion………………………………………………………………………67

Feasibility and acceptability

Efficacy

Summary

Appendices………………………………………………………………………83

Figures……………………………………………………………………………90

Tables……………………………………………………………………………93

References………………………………………………………………………103

Biographical data……………………………………………………………..126
LIST OF ILLUSTRATIVE MATERIALS

Figure 1. Sample and flow of subjects through a brief intervention for alcohol use:
Counseling Center

Figure 2. Sample and flow of subjects through a brief intervention for alcohol use:
Psychological Services Center

Figure 3. Reported drinks consumed per week

Table 1. Assessment scheme

Table 2. Components of intervention: Public Health Model combined with supplementary components of BASICS

Table 3. Comparison of condition components

Table 4. Demographic characteristics, Counseling Center and PSC

Table 5. Drinking variables for completed sample

Table 6. Mental health characteristics of completed sample

Table 7. Therapist beliefs about offering the program to eligibles

Table 8. Therapist perceptions of why students enrolled or declined participation
Screening and Brief Intervention for Hazardous Alcohol Use: A Pilot Study in a College Counseling Center

In the United States, college drinking has been identified as a major public health concern (e.g., U.S. Department of Health and Human Services, 2000, 2007). The pervasive and detrimental use of alcohol on college campuses inspired calls for wider implementation of empirically supported interventions in college settings (NIAAA, 2002). In the general population, high rates of risky drinking are seen among patients in emergency departments and health centers. Also, within the general population, alcohol use disorders co-occur with psychiatric disorders, such as mood and anxiety disorders. Taken together, it follows that health and mental health centers may serve as high-yield settings for screening and brief intervention (SBI) on college campuses. Although numerous studies have examined the impact of SBI in college health centers (see Seigers & Carey, 2010 for review), the impact of SBI within college mental health services has not yet been studied.

The current document outlines the rationale and methodology for implementation of SBI for risky alcohol use in a college counseling center. First, this document will briefly review epidemiology of college drinking and consequences. Second, this document will provide a description of empirically supported interventions, including challenges and opportunities for dissemination in health and mental health centers. Finally, the document will describe the
methodology and results of the current study. This study is an initial demonstration of SBI efficacy in a sample of students seeking mental health services. The aims of the proposed study were to (a) to examine the feasibility and acceptability of implementation and, (b) to examine the short-term impact of SBI on alcohol use, treatment utilization, client satisfaction, and clinical symptoms.

**Alcohol Use on College Campuses**

Alcohol use is a normative behavior among college students. In a national sample of 14,115 college students, 80% had consumed alcohol within the past year (Knight, et al., 2002). Of the students who drink, nearly 50% engage in occasional heavy (binge) episodes, defined as the consumption of five or more drinks in one sitting within the past two weeks (Substance Abuse & Mental Health Services Administration, 2009a).

Compared to their non-college-attending peers, college students have greater yearly, monthly, and weekly alcohol use in addition to more frequent binge episodes (Slutske, 2005). Students ages 18 to 24 years old tend to drink more during parties than non-students (Johnston, O'Malley, Bachman, & Schulenberg, 2005) and are more likely to receive an alcohol use disorder diagnosis than their age-matched peers not in college. Knight and colleagues (2002) estimate that more than 30% of students meet criteria for alcohol abuse, and approximately 6% of college students meet diagnostic criteria for alcohol
dependence. Thus, the majority of students attending college consume alcohol, nearly half engage in occasional or frequent binge episodes, and almost a third of students qualify for an alcohol use disorder. The frequency and intensity of alcohol use by college students exceeds that of their non-attending counterparts, suggesting that young adults in residential college settings are at high risk for negative consequences related to drinking (Slutske, 2005).

**Consequences of Alcohol Use**

A variety of consequences have been associated with college student alcohol use. Recently, attention has expanded beyond consequences that affect the drinker, to include effects on the drinker’s social environment. Perkins (2002) labels those as damage to the self, to others, and to the institution.

**Damage to the self.** College students who drink heavily may experience a variety of short and long-term negative consequences. Short-term health consequences include adverse physical and psychological states, including vomiting, hangovers, nausea, fights with others, risky sexual behavior, and depressed mood related to heavy use (Bersamin, Paschall, Saltz, & Zamboanga, 2011; Park, 2004). The occurrence of blackouts reported by students who drink heavily is well documented, and over half of college binge drinkers have reported at least one instance in which they blacked out and experienced memory loss (A. M. White, 2003). Alcohol use may also lead to legal problems (Wechsler, et al.,
At Syracuse University, nearly 75% of legal problems through Judicial Affairs involved alcohol (Office of Judicial Affairs, 2008).

Heavy alcohol use can adversely affect a student’s academic performance. Alcohol use and academic achievement are negatively associated, such that individuals who engage in greater alcohol use tend to perform more poorly in college (e.g., Paschall & Freisthler, 2003; Wolaver, 2002). Heavy drinking is associated with greater involvement in non-academic social activities (Martinez, Sher, & Wood, 2008) and reduced study time (Wolaver, 2002), which are related to academic performance. Drinking in college has the most pronounced negative effect on educational outcomes for students who had high academic performance during high school (Wood, Sher, & McGowan, 2000).

Long-term health consequences of alcohol use may include damage to the brain and liver and deregulation of hormonal balance (Clark, Lynch, Donovan, & Block, 2001; Dees, Srivastava, & Hiney, 2004) as well as increased vulnerability to infection (Engs & Aldo-Benson, 1995). Notably, an estimated 1,825 college students die from alcohol-related injuries and approximately 599,000 students sustain alcohol-related injuries each year (Hingson, Zha, & Weitzman, 2009).

**Damage to others.** In addition to the consequences sustained by the individual, others are also adversely affected by excessive alcohol use. Approximately 696,000 students each year are assaulted by another student who has been drinking, and 97,000 students aged 18-24 are victims of sexual assault or
date rape related to alcohol use (Hingson, et al., 2009). In addition, heavy drinking students disrupt others’ sleep and interrupt efforts to study; lighter drinkers also report having to “babysit” other students who drink too much (Wechsler, et al., 2002). Thus, the impact of alcohol use affects both the drinker and others within his/her environment, including other students, friends, and the larger campus community.

**Damage to the institution.** Consequences of drinking also negatively impact campus facilities and resources. Over half of college administrators at colleges with heavy drinking levels describe having a moderate to major problem with property damage and vandalism on campus (Wechsler, Moeykens, Davenport, Castillo, & Hansen, 1995). Carey et al. (2009) determined that from 2005 to 2006, alcohol was related to an average of 16.5% of all ambulance trips per year at a university emergency department. The annual expense was estimated at $100,000. Additional costs to the institution may include security costs, legal costs, administrative hearings, enforcement of alcohol policies, student attrition, and/or a negative impact on the institution’s reputation (Perkins, 2002). Due to the negative impact of the aforementioned consequences, nearly all colleges and universities invest resources in alcohol education and prevention programs (Wechsler, Seibring, Liu, & Ahl, 2004).

**Responses to College Alcohol Use**
The National Advisory Council on Alcohol Abuse and Alcoholism (NIAAA) established the Task Force on College Drinking in response to the pervasive and detrimental use of alcohol on college campuses within the United States (NIAAA, 2002). Educators, alcohol researchers and students compiled a comprehensive review of the current research and strategies to prevent college drinking. The Task Force recommended dissemination and implementation of existing efficacious interventions; empirically supported interventions for at-risk students typically include cognitive-behavioral skills with motivational enhancement and norms clarification. Although intervention can also take place at the campus and policy levels, the majority of empirically supported interventions focused on the individual level.

More recent reviews of college drinking interventions confirm that efficacious interventions at the individual-level are often brief and focus on education/awareness, cognitive-behavioral skills, or motivational enhancement (Carey, Scott-Sheldon, Carey, & DeMartini, 2007; Larimer & Cronce, 2007; Larimer, Cronce, Lee, & Kilmer, 2004). These authors concluded that brief interventions (BIs) that combine skills-based approaches and motivational interviewing (Miller & Rollnick, 2002) are efficacious strategies for curbing risky drinking behavior. In contrast, educational interventions based solely on providing information or enhancing knowledge were not deemed efficacious, nor
were interventions that provided values clarification in addition to information related to alcohol use.

**BIs for college students.** Several BIs have been developed for use in college settings based on the *Brief Alcohol Screening and Intervention for College Students* (BASICS; Dimeff, Baer, Kivlahan, & Marlatt, 1999). This intervention aims to reduce harmful alcohol consumption and problems associated with alcohol through use of cognitive behavioral strategies, psychoeducation, personalized feedback on drinking patterns, all couched within a motivational interviewing, nonconfrontational framework. Like many BI models designed for use outside of addictions treatment settings, BASICS utilizes a harm reduction approach; that is, it encourages incremental changes based on proximal goals that reduce the risky or harmful behaviors that are associated with alcohol use.

The BASICS model typically involves two, 50-minute sessions. The first session allows for assessment of the student’s drinking patterns and other factors that may relate to risk of negative consequences. During the second session, students are provided a personalized feedback sheet related to their drinking patterns, normative comparisons to other students, beliefs and attitudes about drinking, as well as provision of a personalized blood alcohol card, and tips sheet that summarizes information related to the effects of alcohol.

Many well-designed studies support the use of brief intervention for high-risk college drinkers, including variations on the BASICS model (e.g., Borsari &
Carey, 2000, 2005; Carey, Carey, Maisto, & Henson, 2006; LaChance, 2004; Larimer, et al., 2001; McNally, Palfai, & Kahler, 2005; Murphy, Colby, Correia, & Vuchinich, 2005). In general, students receiving BI have reported fewer alcohol-related problems and decreased consumption (e.g., Baer, Kivlahan, Blume, McKnight, & Marlatt, 2001; Borsari & Carey, 2005). Effect sizes reported for these variables range from small to large (\(d = .15-1.11\); Cohen, 1988) up to six months following the intervention (Borsari & Carey, 2005; Carey, et al., 2006; Dimeff & McNeely, 2000; Kypri, et al., 2004). A recent meta-analytic review of 62 individual-level interventions for college drinking determined that face-to-face interventions using both MI and personalized normative feedback were associated with fewer alcohol-related problems than comparison conditions (Carey, et al., 2007). Research also supports the use of variations on BASICS as a selective prevention approach for students in at-risk groups, such as members of fraternities (Larimer, et al., 2001) or mandated students (Carey, Henson, Carey, & Maisto, 2009). Currently, BASICS has been identified as a model program by Substance Abuse and Mental Health Services Administration (Substance Abuse & Mental Health Services Administration, 2009b).

Two mechanisms have been proposed to mediate the relationship between intervention and outcomes among college samples: perceived norms and protective behavioral strategies. First, perceived norms refer to what the individual considers to be normal within a particular population. In alcohol
research, this includes two dimensions, “injunctive” norms, which refer to the perceived extent of approval or disapproval of a particular behavior, and “descriptive” norms, which refers to quantity or frequency of a given behavior, in this case alcohol use among college students (Cialdini, Reno, & Kallgren, 1990). Strong support exists suggesting that changes in perceived descriptive norms mediate the effects of norms-based BIs on alcohol consumption (e.g., Borsari & Carey, 2000; Carey, Henson, Carey, & Maisto, 2010; Mattern & Neighbors, 2004; Neighbors, Larimer, & Lewis, 2004). That is, the effect of an intervention on alcohol outcomes depends in part on the degree to which students reduce inflated perceptions of drinking norms. In contrast, injunctive norms have not been found to mediate BI outcomes (Carey et al., 2010).

Evidence suggesting protective behavioral strategies mediate treatment outcomes is mixed. Strategy use has been defined as “behaviors that individuals can engage in while drinking alcohol in order to limit negative alcohol related consequences” (M. P. Martens et al., 2005). Research has indicated associations between strategy use and alcohol consumption (Benton et al., 2004; Glassman, Werch, & Jobli, 2007; Matthew P. Martens et al., 2005; Dawn E. Sugarman & Carey, 2007; C. E. Werch, 1990; C. E. Werch & Gorman, 1988) as well as strategy use and alcohol-related consequences (Delva et al., 2004; Glassman et al., 2007; Haines, Barker, & Rice, 2006; Matthew P. Martens et al., 2005; Matthew P. Martens et al., 2004). Among the few studies examining the
meditational role of protective behavioral strategies, two suggested that strategy use was a mediator of alcohol outcome (Barnett, Murphy, Colby, & Monti, 2007; Larimer, et al., 2007) but a third suggested that strategy use was not related to the intervention, but only 21st birthday BAC independent of intervention exposure (Neighbors, Lee, Lewis, Fossos, & Walter, 2009). More recent data suggest that increasing protective behavioral strategies has a moderating effect on an intervention, such that increasing strategies was associated with fewer negative consequences, especially among individuals with worse physical and mental health (LaBrie, Kenney, & Lac, 2010).

In sum, strong evidence supports the efficacy of BI in college settings. Furthermore, experts call for broadening the use of empirically supported treatments for risky college drinking. One method of expanding the reach of empirically supported treatments is to adopt elements of screening and brief intervention models employed in other health settings.

**Screening and Brief Interventions (SBIs)**

Similar to BIs developed for college settings, SBIs aim to reduce alcohol consumption to non-hazardous levels and improve the health of the general population. However, the SBI strategy also serves to detect hazardous or at-risk alcohol use to more efficiently direct BIs to those who would most benefit. Individuals who are not necessarily presenting for alcohol treatment may be screened in healthcare or public health settings as a means to broaden access to BI
for alcohol use reduction. In general, key components of SBI include some or all of the following: (a) screening, (b) feedback on personal risk, (c) self-help information for behavior change, and (d) follow-up.

First, screening typically involves a paper-and-pencil administration of a measure that detects at-risk alcohol use behavior. Commonly used screening instruments include the Alcohol, Smoking and Substance Involvement Screening Test (ASSIST; Humeniuk, et al., 2009), the Alcohol Use Disorders Identification Test (AUDIT; Saunders, Aasland, Babor, De La Fuente, & Grant, 1993b), and CAGE questionnaire (Aertgeerts, Buntinx, & Bande-Knops, 2000). Typically, cutoff criteria are applied to the screening tool so practitioners are aware when an individual indicates scores above at-risk thresholds. Second, following indication that the individual engages in at least moderate risky alcohol use (as measured by the screening tool), a brief intervention is administered, which aims to raise awareness related to substance use and its consequences. This usually includes provision of feedback related to the individual’s drinking patterns, including notification if they are drinking at at-risk levels. Third, individuals receive recommendations for modifying alcohol use. Finally, the practitioners may follow-up with the individual or provide a referral to another provider in cases of severe substance abuse or dependence.

In addition to these primary components, SBIs are often couched within a motivational interviewing style (MI; see Miller & Rollnick, 2002) for complete
discussion). MI is particularly useful for individuals who are ambivalent about changing their hazardous drinking patterns and is a directive, client-centered approach to assessing, exploring, and supporting client motivation for behavioral change. Characteristics that embody the spirit of motivational interviewing include (a) collaboration with the client, (b) evocation, or elicitation of reasons and methods of change from within the client, and (c) affirmation of autonomy. MI utilizes four general principles to elicit change talk related to the risky behavior. These include (a) expression of empathy, (b) supporting self-efficacy, (c) rolling with resistance (rather confronting the client), and (d) the development of discrepancies between the client’s values/goals and current behavior. Typically, MI includes a collaborative exploration of the client’s ambivalence related to the behavior, and the interventionist seeks to shift the perceived cost-benefit analysis. Interventionists use reflective listening, open ended questions, affirmation, summarizing, and directive efforts to elicit and elaborate on change talk to cultivate a commitment to change (cf. Apodaca & Longabaugh, 2009).

One example of a well-documented SBI was derived from the World Health Organization (WHO) Collaborative Project on Identification and Treatment of Persons with Harmful Alcohol Consumption. Like current recommendations from the Task Force on College Drinking, this project was established in response to a call for scientifically-based strategies for alcohol screening and brief interventions in primary care (Babor & Higgins-Biddle,
This project spawned the Alcohol Use Disorders Identification Test (AUDIT) and a companion manual for administering and interpreting the AUDIT, (Babor, Higgins-Biddle, Saunders, & Monteiro, 2001) as well as a manual for implementing brief interventions.

Another SBI model that provides a general framework for the application of SBI in multiple settings is the Alcohol Screening and Brief Intervention: A Guide for Public Health Practitioners (American Public Health Association and Education Development Center Inc., 2008). The American Public Health Association (APHA) developed this manual to provide a model appropriate for intervening with individuals outside of primary care settings. This manual provides specific recommendations for adaptation within clinical settings, as well as specific recommendations for logistical issues, choosing a screening tool, and handling situations in which clients may not be receptive to change. The APHA model involves four steps, including (a) raising the subject, (b) providing feedback regarding alcohol use, (c) enhancing motivation, and (d) negotiating and advising the client. Unlike most current SBI models, the APHA model provides specific implementation guidelines for mental health settings. Recent years have seen the development and dissemination of several other manuals for SBIs in publicly accessible formats, including Rethinking Drinking (National Institutes of Health, 2009), Enhancing Motivation for Change in Substance Abuse Treatment (Miller, 1999), Helping Patients Who Drink Too Much (National Institutes of
Health, 2005), Screening and Brief Intervention for Unhealthy Alcohol Use in the ED (D’Onofrio, Pantalon, Degutis, Fiellin, & O’Connor, 2004) and Alcohol Screening and Brief Intervention for Trauma Patients (American College of Surgeons, n.d.).

Reviews and meta-analyses have concluded that SBI implemented in primary care settings is efficacious in reducing alcohol consumption among men and women up to 12 months post-intervention (e.g., Ballesteros, Duffy, Querejeta, Arino, & Gonzalez-Pinto, 2004; Bertholet, Daeppen, Wietlisbach, Fleming, & Burnand, 2005; Whitlock, Polen, Green, Orleans, & Klein, 2004). Furthermore, alcohol reduction interventions in emergency departments reduce the odds of subsequent alcohol-related injury (Havard, Shakeshaft, & Sanson-Fisher, 2008). SBIs that target younger adults in emergency departments are both feasible and efficacious (Hungerford et al., 2003). Thus, use of SBI with both older and younger adults has been shown to be efficacious, and these strategies may translate into college health settings.

**SBI in campus health centers.** According to a review by Seigers and Carey (2010) ten published studies have examined efficacy of brief interventions for alcohol use in campus health centers. All studies recruited exclusively from on-campus health centers. The outcomes of SBI in on-campus health centers are encouraging. All three of the uncontrolled studies documented reductions in consumption at follow-up (Ehrlich, Haque, Swisher-McClure, & Helmkamp,
controlled studies found that alcohol-focused brief interventions produced significantly larger reductions than control conditions (Dimeff & McNeely, 2000; Ingersoll et al., 2005; Kypri, Langley, Saunders, Cashell-Smith, & Herbison, 2008; Kypri, et al., 2004; Schaus, Sole, McCoy, Mullett, & O’Brien, 2009).

The two exceptions are worth noting. One intervention that did not produce alcohol risk reduction focused on multiple health behaviors, perhaps diluting the focus on alcohol use (Kypri & McAnally, 2005). The second (Werch et al., 2007) used a design that compared individual and combined components of brief interventions, without comparison to a true control; these authors reported reductions in risk behavior and increases in protective behaviors for all three conditions. Thus, all available evidence suggests that a brief alcohol-focused intervention is likely to reduce risky drinking among students presenting to college health centers, and such reduction reliably exceeds that of routine care or providing just written alcohol information. It is worth noting that students seeking health care services were not requesting interventions for alcohol risk reduction; nonetheless, SBI produced risk reduction under these conditions.

All of the studies that evaluated intervention acceptability and feasibility reported that students and practitioners perceived the interventions positively (Dimeff & McNeely, 2000; Ehrlich, et al., 2006; Helmkamp, et al., 2003). In other words, the limited data on attitudes and perceptions of SBIs support their
implementation. Enrollment practices varied, with some obtaining student consent for participation and then screening for eligibility (Ehrlich, et al., 2006; Helmkamp, et al., 2003), some not applying any screen for risky drinking (Kypri & McAnally, 2005; C. Werch, et al., 2007), and most screening for eligibility and then consenting only those who met hazardous drinking criteria (Dimeff & McNeely, 2000; Ingersoll et al., 2005; Kypri et al., 2008; Kypri & McAnally, 2005; Kypri et al., 2004; Martens et al., 2007; Schaus et al., 2009). Of the latter set of studies that used screening tools to identify hazardous drinkers, 63-80% of students were willing to enroll and receive an intervention. This provides additional evidence of the feasibility of college health centers as venues to engage at-risk college drinkers. Finally, all interventions conducted were less than 75 minutes in length, with relatively few materials, demonstrating that single, relatively brief contacts with at-risk students can effectively reduce drinking.

In sum, although limited in quantity, the studies evaluating efficacy of brief alcohol-focused interventions in college health centers reveal consistent risk reduction outcomes. Furthermore, they document the ability to access at-risk drinkers and their willingness to participate in an additional brief intervention at the time they seek medical services. Despite promising evidence of the efficacy of brief interventions in other campus health settings, no research has examined individual-based interventions in college mental health settings. Future research is warranted to test the efficacy of individual-based interventions in other
“opportunistic points of contact,” including students presenting at counseling centers (Larimer & Cronce, 2007). Consistent with recommendations by the Task Force, expanding the reach of efficacious brief alcohol interventions into college counseling centers generates an additional avenue for intervention.

Access to At-Risk Drinkers in Counseling Centers

Within the general population, alcohol use disorders (AUDs) co-occur with psychiatric disorders (Dawson, Grant, Stinson, & Chou, 2005; Grant et al., 2004; Regier et al., 1990). National epidemiological survey data indicate that 9% of adults meet 12-month prevalence criteria for an alcohol use disorder. In addition, survey data indicate that 17% of individuals who meet 12-month prevalence criteria for any mood disorder also have an AUD, as do 13% of adults with anxiety disorders (Grant et al., 2004). Across multiple disorders, these associations also appear in adult clinical populations, and the prevalence of co-occurring psychiatric disorders and AUDs ranges from 10-31% (Grant et al., 2004).

Ample research has examined the impact of alcohol use on psychiatric outcomes in adult clinical populations. Comorbidity of alcohol use and psychiatric disorders is associated with increased impairment and disability, suicide, medication non-compliance, violent behavior and a worse clinical course (Berglund & Ojehagen, 1998; Dixon, 1999; Mueser, Bellack, & Blanchard, 1992; Pristach & Smith, 1990; Salloum & Thase, 2000; Swartz et al., 1998). Although
these relationships have been explored extensively in general adult and clinical samples, limited attention has been focused on clinical samples of young adults in college.

Within the general college student population, a relationship between alcohol use and psychiatric disorders has also been established (Dawson et al., 2005; Kushner & Sher, 1993). College students with an anxiety disorder are 2 to 5 times more likely to meet diagnostic criteria for an AUD than those without an anxiety disorder (Kushner, Sher, & Erickson, 1999), and frequent binge drinking is associated with generalized anxiety disorder (Cranford, Eisenberg, & Serras, 2009). In a national sample of college students, Weitzman (2004) determined that students with poor mental health and depression were more likely to experience drinking related harm and drinking alcohol for the purpose of getting intoxicated compared to students who did not have poor mental health or depression.

Recent data from the Syracuse University Psychological Services Center suggest that 33% students seeking services from 2005-2008 reported hazardous levels of alcohol use at the initial intake interview (Seigers & Carey, 2010). Furthermore, students who engaged in hazardous use also reported greater anxious and depressive symptoms as well as perceived stress than students who did not indicate hazardous alcohol use. Hazardous use was also related to the client’s attendance rate and number of no-show appointments, such that students
with hazardous alcohol use had worse attendance rates and greater no-show rates (Seigers & Carey, 2010).

The data described above suggest that campus counseling centers may be high yield settings for detecting at-risk drinkers. The benefit of providing an intervention to students in this setting is twofold. First, consistent with previous interventions conducted with high-risk drinkers, participants may reduce alcohol consumption and problems. Second, use of SBI to reduce problematic alcohol use may improve treatment–related outcomes, leading to improvement on behavioral or psychological dimensions of treatment.

Purpose of the Study

College mental health settings can serve as additional venues for implementing SBIs for risky alcohol use. However, no published research examines the effect of a BI on college students who are seeking treatment at a campus-based counseling center and who indicate hazardous drinking behavior. The following study tested the feasibility and efficacy of implementing SBI for alcohol use in a college mental health center. Participants were treatment-seeking students who reported at-risk drinking behavior. Outcomes were assessed one and two months after either a brief alcohol intervention or minimal intervention condition (an alcohol risk reduction pamphlet). This study adds to the existing literature in three ways. First, this study examined the feasibility and acceptability of implementing such an intervention, from the perspectives of both students and
staff. Second, this was the first test of the efficacy of SBI in a sample of at-risk drinkers presenting with mental health complaints. Finally, this study examined the impact of SBI on students’ treatment utilization and symptoms of depression.

We had five primary hypotheses. First, it was expected that participants who receive a BI for alcohol use would report greater client satisfaction, and find the intervention condition more informative compared to participants in the control condition. This is consistent with previous research on BIs that reveals that satisfaction with these sessions surpasses the alternatives (e.g., Butler & Correia, 2009; Carey, Henson, et al., 2009).

Second, it was expected that participants who receive a BI for alcohol use would significantly reduce weekly alcohol use, frequency of heavy drinking episodes, and peak blood alcohol content at follow-up compared to control participants who receive no intervention. This prediction is based on precedents that show reductions in alcohol consumption after BI relative to no-treatment or minimal treatment control conditions (e.g., Borsari & Carey, 2000; McNally, et al., 2005; Walters, Vader, Harris, & Field, 2009; H. R. White, et al., 2006). Third, participants who received a BI for alcohol use would significantly reduce alcohol-related problems at follow-up compared to control participants. This prediction follows from studies that document BI-related reductions in problems for periods up to three months (e.g., Carey, et al., 2006).
Fourth, participants who receive a BI for alcohol use will have significantly fewer number of missed appointments compared to control participants. This prediction follows from our own research (Seigers & Carey, 2010), as well as literature on the impact of comorbid disorders on psychiatric treatment attendance (e.g., Berglund & Ojehagen, 1998; Salloum & Thase, 2000). Finally, it is expected that participants in the intervention condition will report fewer depressive symptoms compared to control participants. Little research has clearly examined the relationship of SBI to the reduction of clinically significant symptoms.

A secondary set of hypotheses related to the process of change were examined, contingent upon finding intervention effects on alcohol outcomes or psychological variables at the 2-month follow-up. First, if there was an intervention effect on depressive symptoms or perceived stress, we would explore whether reductions in drinking mediate the intervention effect. Second, if there was an intervention effect on alcohol-related outcomes at the 2-month follow-up, we would assess mediation by self-reported strategies at 1-month follow-up. Several studies with college students have suggested that estimates of typical drinking or perceived drinking mediate the reductions derived from the intervention (Borsari & Carey, 2000; Carey, et al., in press; Walters, et al., 2009). We aimed to evaluate this mechanism within a counseling center sample. Currently, evidence is mixed as to whether protective behavioral strategies
mediate brief alcohol intervention effects in college samples. Some evidence suggests that protective behavioral strategies mediate intervention outcomes of drinking at follow-up (Larimer, et al., 2007), whereas others indicate no association between protective strategies and consumption (Neighbors, et al., 2009).

Method

Overview of Design & Sample Size Consideration

The following study implemented a screening and brief intervention protocol for alcohol abuse within the context of ongoing treatment at a university counseling center and a graduate training clinic. The randomized control design included one intervention condition and a pamphlet-only control group. Eligible students were identified based on a screening test administered at the clinical intake and were invited to participate in a free consultation about their alcohol use. Consent ing participants were randomized to the control or intervention condition. The single-session brief alcohol intervention supplemented treatment as usual. All participants were contacted for follow-up assessments at one and two months following their intervention appointment. Figure 1 and 2 contains participant flow charts by primary and secondary setting, and Table 1 contains assessment scheme.

Prior to conducting the study, effect size estimates corresponding to independent groups t-tests (i.e., $d$) were derived from studies using a similar
design (BI vs. minimal intervention) with college student participants (Dimeff & McNeely, 2000; Kypri, et al., 2004). Estimated mean effect sizes for outcomes at 1-2 months post-intervention for three of the four proposed dependent variables (drinks per week, binge frequency, and alcohol-related problems fell in the moderate range according to Cohen’s (1988) guidelines (small = 0-.30, medium = .30-.80, large = .80 or greater). Power analyses were conducted to estimate sample size using G*Power 3 (Faul, Erdfelder, Buchner, & Lang, 2009), specifying an alpha of .05, power of .80, and the most conservative $d$ of .30. These sample size calculations yielded a total $N$ of 278. Additionally, previous research in a mental health center on campus revealed 30% of students met eligibility criterion of a score of eight or greater on the AUDIT (Seigers & Carey, 2009b). Thus, an estimated 927 students needed to be screened to obtain the final sample size of 278. This intake rate was consistent with historical data from 2009-2010 ($N = 889$).

After 1 year of recruitment, 35 students were enrolled in and participated in the study. Post hoc analyses were conducted to determine achieved power based on the sample size using G*Power 3 (Faul, et al., 2009). Specifying a sample size of 35, alpha of .05, and $d = .30$ indicated the study was underpowered, with a power of .18. In other words, from the outset, the likelihood or probability of detecting a significant effect, given that one is present was low (medium effect size of $d = .30$ would be detected 18% of the time).
Settings

The Syracuse University Counseling Center (CC) served as the primary recruitment site; the CC is a freestanding facility that offers short-term therapy at no charge for full-time students enrolled in the university. Therapists include licensed social workers, psychologists, interns, and one part-time psychiatrist. For the duration of the study from March 2010 to April 2011, 11 staff members and graduate interns completed 734 regular intake assessments. By the third semester of data collection, two therapists no longer worked at the CC, and two graduate therapists had left the center.

The center typically conducts two types of intakes: standard and urgent. Standard intakes typically last one hour, and include students who are self-referred to the counseling center or are referred by another provider. Urgent intakes are approximately 15-30 minutes in length, and result from health provider or self-referrals that indicate a crisis situation (e.g., suicidal or homicidal risk). Clients receive a therapist assignment following the intake assessment, most often the therapist who conducted the intake. However, clients experiencing severe mental illness, as determined by the intake therapist, are referred to treatment at a community-based agency. Both standard and urgent intakes include self-report questionnaires, a semi-structured interview, and mental status exam. CC staff conducted a total of 734 regular intakes and 135 urgent intakes from March 2010 to mid-April 2011.
In the typical standard intake procedure, clients arrive 15 minutes prior to the intake appointment to complete the following: a statement of understanding and confidentiality, contact information, and a four-page Counseling Center Student Questionnaire that includes racial/ethnic background, academic status, athletic status, fraternity/sorority status, chronic illness, medication, history of abuse, previous treatment, presenting issue, perceived urgency of the problem(s), and information regarding immediate family members (e.g., age, relationship, occupational status). At the time the study was implemented, empirically validated scales included in the standard intake were the AUDIT (Saunders, Aasland, Babor, de la Fuente, & Grant, 1993a), and the Beck Depression Inventory-II (Beck, Steer, & Brown, 1996). In October 2010, the Beck Depression Inventory was removed from intake protocol and replaced by the Patient Health Questionnaire (Kroenke, Spitzer, & Williams, 2001). Due to this change, the BDI-II score of one participant was not collected at baseline.

The Psychological Services Center (PSC) was added as a secondary site in September 2010 to increase the flow of referrals. Data were collected at the PSC September 2010 to April 2011. The PSC is a university training clinic that offers short and long term therapy to university clients (graduate and undergraduate) at a nominal fee. Therapists included seven clinical psychology doctoral students who worked part time (20 hours per week) from August 2010 to April 2011.
The PSC conducts two types of intake assessments including standard intakes and ADHD assessments. Intakes are booked in two-hour increments, and average length varies by therapist. From October 2010 to April 2011, 41 regular intakes and 24 ADHD intakes were conducted. In the typical standard intake procedure, clients arrive at the appointment and complete the following empirically validated scales: the AUDIT (Babor, et al., 2001), the Beck Depression Inventory (Beck, et al., 1996), the Beck Anxiety Inventory II (Beck & Steer, 1990), and the 4-item Perceived Stress Scale (Cohen, Kamarck, & Mermelstein, 1983a). Following completion, therapists conduct a semi-structured interview assessing social relationships, presenting problem and symptoms, family history, past and current drug use, and sexual history. Clients receive a therapist assignment following the intake assessment, most often the therapist who conducted the intake. Clients who are identified as substance dependent and/or are experiencing psychiatric symptoms that significantly interfered with expressive or receptive communication are typically referred to specialists within the community.

In the typical ADHD assessment procedure, clients arrive and receive the same measures included in the standard intake. In addition, clients are administered a standardized battery designed to assess executive functioning, attention, and symptoms of ADHD (Gioia, Isquith, & Kenworthy, 2000; Conners,
Program Implementation

Prior to activating the study, several steps were taken to ensure smooth implementation of the program (National Institute on Alcohol Abuse and Alcoholism, 1998; Ribisl et al., 1996). First, the program was marketed to PSC and CC administration several months prior to implementation. A total of five face-to-face meetings with CC and PSC directors and administrative staff addressed issues related to feasibility, and specifics of research protocol; the PI, her mentor, and administration brainstormed potential barriers to staff implementation. These recommendations and barriers were considered when developing the recruitment protocol.

Second, the program was branded (e.g., given name, logo) and introduced to staff after being strongly endorsed by administration. Third, during introduction of the program, staff were trained on recruitment strategies, and were provided a script and other materials for pitching the study. Fourth, to maintain good relationships between the PI and staff, the PI joined staff twice weekly during lunch hours, and maintained a presence in the CC for approximately 8-10 hours per week whether or not appointments were scheduled. In other words, the PI/interventionist remained onsite for approximately 360-450 hours from March 2010-April 2011. Fifth, to lower attrition of participants, clear tracking systems
for participants were established and maintained. Finally, each therapist was contacted twice each semester via email to deliver information and reminders about the study. This information was also provided via hardcopy and put in staff mailboxes.

**Participants**

*Selection and recruitment.* Clients were invited to participate in the study if they were (a) therapy-seeking university students, (b) 18 years or older, and (c) indicated a score of eight or greater on the AUDIT. Individuals were not invited to participate in the study if they (a) scored less than eight on the AUDIT, (b) were experiencing disruptive psychiatric symptoms that seriously impaired expressive or receptive communication, or (c) were mandated to receive a psychological assessment by the university due to preexisting academic, behavioral, or legal issues. The last exclusion criterion was required by the CC.

Students seeking mental health services (at the CC and PSC) completed the Alcohol Use and Disorders Identification Test (Babor, et al., 2001), and protocol dictated that those who met criteria for hazardous or harmful alcohol use (score $\geq 8$) were offered the opportunity to sign up for the intervention or request additional information from the PI about participation. Participants not meeting the hazardous drinking criteria were not offered the program by the therapist. Based on study criteria, 163 (20%) students were eligible for the study. Of those that were eligible, 97 (60% of eligibles) were offered the program by the
therapists, and 53 (55%) of those students offered the program agreed to participate or receive more information about the program. A total of 35 eligible participants agreed to participate (66% of those contacted by the PI) and were randomized to conditions (15 in the intervention condition; 20 in the control). Figures 2 and 3 detail participant flow for the study by site.

The majority of the participants were recruited from the CC ($n = 30, 87\%$ of total sample). The PSC was added as an additional recruitment site in September of 2010, resulting in an additional 5 participants (14% of total sample). Table 4 represents demographic data retrieved from the master database and all students presenting for treatment at the counseling center, ($N = 1,243$). When examining demographic information, the primary database was unable to exclude those who were not eligible from the study (e.g., mandated assessments, crisis interventions), and all students utilizing Counseling Center Services are included in Table 4. However, students eligible for screening at the CC yielded 734 students. Of those, 147 (20%) had an elevated AUDIT score and were eligible to be recruited for the study. At the PSC, 65 students were eligible for screening. Of those, 16 (25%) had an elevated AUDIT score and were eligible to be recruited for the study.

**Sample description.** Participants were primarily female ($n = 19, 54\%$), Caucasian ($n = 26, 74\%$), and in their senior year of college ($n = 15, 43\%$). Few participants indicated involvement in the Greek system (6% pledging or a
member) and were a member of an athletic team \((n = 1, 3\%)\). Table 4 shows demographic information of participants. At baseline, participants who enrolled in the study consumed an average of 18.61 \((SD = 9.79)\) drinks per week, and typically consumed alcohol on 3.54 \((SD = 1.29)\) days per week. Tables 5 and 6 depict participant characteristics on baseline measures of alcohol use, alcohol-related consequences, and measures of mental health. Analyses indicated no differences on baseline measures of alcohol use or mental health by condition.

**Measures**

Information used in this study came from three sources. First demographic information, presenting problems, and treatment utilization data were retrieved from student file records. Second, information about alcohol use, alcohol-related problems, depressive symptoms, and perceptions of the intervention came from self-report survey data collected from participants at baseline, 1 and 2-month follow-up surveys. Finally, therapist perceptions were measured using self-report surveys that were administered at the end of each semester the study was active.

**Demographics and presenting problems.** Each participant provided basic demographic information consisting of age, year in school, race/ethnicity, gender, fraternity/sorority status, and athletic status. For clients at the CC, this was obtained from the Counseling Center Student Questionnaire. For individuals seeking treatment at the PSC, these data were collected from an identification card filled out by the receptionist when the student was requesting an
appointment. All data were collected from the client’s file following his/her consent to be in the study used to describe the sample. As part of the baseline assessment, participants provided their current weight for calculating blood alcohol content.

Information regarding participants’ presenting problem at the mental health intake was collected from their client file. Information collected included (a) diagnostic impressions (i.e., axes I and II), and (b) the medications included in the Counseling Center Student Questionnaire.

**Alcohol Use Disorders Identification Test.** The total score from the AUDIT (Saunders, et al., 1993a) was used to identify risky or hazardous alcohol use within the past year. The AUDIT is a self-report instrument comprised of 10 items; scores can range from 0 to 40, and a score of 8 or greater indicates hazardous or harmful consumption. Items measure alcohol consumption, dependence symptoms, and problems related to drinking. This measure has been identified as an internally consistent screening tool for hazardous drinking among college students (e.g., $\alpha = .81$), with acceptable sensitivity and specificity (Kokotailo, et al., 2004). Responses to the individual items were collected from client files following written consent from the participant. Total scale reliability for this study was $\alpha = .59$.

**Daily Drinking Questionnaire.** The Daily Drinking Questionnaire (DDQ; Collins, Park, & Marlatt, 1985) is a self-report measure that asks respondents to
record the average number of standard drinks consumed each day in an average week within the past month. A standard drink is considered a 12 oz. can or bottle of beer, 5 oz. glass of table wine, 12 oz. bottle or can of wine cooler, or 1.5 oz. shot of 80 proof liquor either straight or in a mixed drink (Dufour, 2001). The revised DDQ allowed for calculation of drinks per typical week, and drinks per drinking day.

The DDQ was supplemented by five questions, which yielded two more indicators of risky drinking, the maximum number of drinks consumed in a single day and the number of hours over which the maximum was consumed. These variables were used to calculate peak blood alcohol content (BAC; Matthews & Miller, 1979). The frequency of heavy drinking days in the last month was defined as 5 or more drinks for men and 4 or more drinks for women (Wechsler, Dowdall, Davenport, & Rimm, 1995). This measure was administered at all assessment points.

**Brief Young Adult Alcohol Consequences Questionnaire.** The Brief Young Adult Alcohol Consequences Questionnaire (BYAACQ; Kahler, Strong, & Read, 2005) is a 24-item measure designed to assess alcohol-related problems. This measure examines eight areas of alcohol related problems, including (a) social-interpersonal consequences of problematic drinking, (b) impaired control, (c) self-perception, (d) self-care, (e) risk behaviors, (f) academic/occupational consequences, (g) excessive drinking, and (h) physiological dependence. The
BYAACQ displays high internal consistency with college students at baseline and at a six week follow-up ($\alpha = .84$, $\alpha = .89$, respectively; Kahler, Hustad, Barnett, Strong, & Borsari, 2008). The BYAACQ is highly correlated with the original 48-item YAACQ ($r = .95$) and does not display gender bias (Kahler, et al., 2005).

The BYAACQ was administered at all assessment points, using a 1-month time frame. Across the baseline, 1, and 2-month assessment points, total scale reliability was $\alpha = .78$, .79, and .74, respectively.

**Beck Depression Inventory-II.** The total score from the second edition of the Beck Depression Inventory (BDI-II; Beck, et al., 1996) was used to measure self-reported symptoms of depression within the past week. This self-report scale includes 21 items rated on a 0-3 scale. Total score can range from 0 to 63 and higher scores indicate greater depressive symptoms. The BDI-II appears to have a two-factor structure, including a cognitive-affective and somatic factor (e.g., Storch, Roberti, & Roth, 2004). This measure has good internal consistency when used with college students ($\alpha = .90$; Storch, et al., 2004). Responses to individual items were collected from the participant’s intake file or during the baseline assessment, with participant’s consent. The BDI was re-administered at one and two month follow-ups. Total scale reliability for baseline, one and 2-month assessments were $\alpha = .92$, .86, and .87, respectively.

**Perceived Stress Scale, 4-Item.** The total score from the four item Perceived Stress Scale (Cohen, Kamarck, & Mermelstein, 1983b) was used to
measure the degree to which situations in the participant’s life are perceived as stressful. Items are rated on a five-point Likert scale from 0 (never) to 4 (very often). Total score can range from 0 to 16 and higher scores indicate greater amounts of perceived stress. This measure had moderate to acceptable reliability at all three assessment points, ($\alpha = .68, .71, \text{ and } .74$).

**Treatment Utilization.** Treatment utilization was examined by collecting the following information from client files following completion of the participant’s 2-month follow-up: total number of scheduled sessions, sessions attended, canceled, and no-showed, and reason for termination. Reasons for termination included: (a) premature termination against clinical recommendations (i.e., client chose to discontinue treatment with or without prior notification), (b) clinically recommended (i.e., resolved presenting problem), or (c) circumstantial termination (e.g., student returned home for the summer, client transferred or referred). Students were also asked at the 1-month follow-up whether or not they discussed the intervention with their therapist after the session, who initiated the conversation, as well as the extent to which they discussed the intervention (0- none to 10- extensively).

Four variables were derived from the chart data to represent distinct aspects of treatment utilization for use in analyses following precedent of Seigers and Carey (2010). Attendance was summarized by three variables: (a) percent of scheduled sessions attended (attend rate), (b) percent of scheduled sessions
cancelled (cancel rate), and (c) percent of scheduled sessions where client no-showed (no-show rate). A dichotomous variable labeled dropout represented termination against clinical recommendations during the 2-month follow up period.

**Post-intervention feedback.** A modified Session Evaluation Questionnaire (SEQ; Stiles & Snow, 1984) was used to assess the participant’s impression of the session and the interventionist. This measure includes 14 items rated as a 7-point bipolar adjective format. Items described the session (e.g., valuable-worthless, pleasant-unpleasant) and the interventionist (e.g., friendly-unfriendly, helpful-unhelpful). Carey et al. (2006) showed that the modified SEQ has good psychometric properties when assessing college drinkers’ perceptions of the session and interventionist (α = .80, α = .86, respectively). This measure was used to ensure that overall qualities of the session (e.g., level of difficulty) and the interventionist (e.g., warmth, caring) were similar across conditions. An additional four items assessing participant’s satisfaction with the intervention were measured on a five-point scale. These questions asked students how interesting, informative, and helpful the intervention was, as well as how likely they would be to recommend the intervention to other students. The 14-item and 4-item scales were administered immediately following each intervention. Sums and averages were calculated for both measures and were internally consistent (α = .79 and .95, respectively).
Therapist perceptions. To assess CC staff perceptions of acceptability of the intervention, an eight-item measure was used at the end of each academic semester. Modeled after the measure developed by Ehrlich et al., (2006) for SBIs in health centers, items included “I support providing the CHOICES program for alcohol abuse in the counseling center,” and “I had positive interactions with Danielle, the CHOICES provider.” Items are rated on a five point Likert scale (strongly disagree-strongly agree). This measure was administered to therapists at the end of each semester the study was active. Information was not linked to indentifying information or participant data to preserve anonymity and was used as an overall indication of staff attitudes towards the SBI service. Internal reliability for this measure was adequate at all three time points (.67, .81, and .84 respectively).

Following completion of the study (April 2011), two additional follow-up questionnaires were administered to assess barriers to recruitment. Specific questions referencing barriers to the study were compiled following informal interviews with therapists involved with the program, observations of staff by the PI, and previously identified barriers to dissemination (Addis, Wade, & Hatgis, 1999). Two questions asked therapists to indicate why they did or did not offer eligible students the intervention. Two questions also asked therapists why they believed students chose to participate. Response options were listed in a checklist format and respondents indicated yes or no to each item.
A modified version of the Organizational Readiness for Change Scale (ORC; Lehman, Greener, & Simpson, 2002) was added as a global measure of readiness for change within the counseling center environment. This measure has been used to assess characteristics of staff and the organization that facilitates transfer of technology and implementation of new services. For the purpose of this study, the modified version retained 7 of the original 18 domains, for a total of 35 questions. These scales assessed therapists’ orientation, openness to growth, adaptability, cohesion among staff members, openness of communication, perceived stress within the environment, and openness for change. Therapists responded to statements indicating their level of agreement on a Likert scale from 1 (strongly disagree) to 5 (strongly agree). Two questions were added to the orientation subscale to assess the degree to which providers used motivational interviewing or risk reduction techniques for clients presenting with risky alcohol use. Overall scale reliability was .80, and the six subscales (excluding orientation) had reliability estimates that ranged from .66-.92.

**Perceived norms.** A modified version of the Drinking Norms Rating Forms (DNRF; Baer, Stacy, & Larimer, 1991) was used to assess perceived norms. This version has been used in recent studies (e.g., DeJong, et al., 2006) and asks respondents to estimate alcohol consumption for typical students of the same gender. Three single items assessed (a) perceived frequency of consumption over a week, (b) perceived number of drinks consumed per week by the typical
student, and (c) perceived number of drinks consumed per occasion. This measure was administered at baseline and at the 1-month follow up.

**Protective Behavioral Strategy Scale.** The Protective Behavioral Strategy Scale (PBSS; M. P. Martens, et al., 2005) is a 15-item measure that was used to assess participants’ use of strategies within the past month. The PBSS contains a three-factor structure including (a) limiting/stopping drinking, (b) manner of drinking, and (c) serious harm reduction. Items are rated using a 5-point Likert scale from 1 (never) to 5 (always). Coefficient alphas range from 0.63-.81 (M. P. Martens, et al., 2005), and all factors are negatively correlated with consumption of alcohol and related consequences. This measure was administered at baseline and the 1-month follow-up. Internal consistency was moderate to acceptable at both time points (α = .66 and .84 respectively).

**Structure and Content of Brief Intervention**

The structure of the brief intervention was adapted from *Alcohol Screening and Brief Intervention: A Guide for Public Health Practitioners* (American Public Health Association (APHA) and Education Development Center Inc., 2008). This intervention is designed for service providers who do not necessarily specialize in addictions treatment, and provides specific guidelines and recommendations for adaptation in clinical settings. Additionally, it is a manual that is available to the public (APHA and Education Development Center
Inc., 2008). The public health model involves four steps that were followed in this study.

First, the interventionist raised the subject of alcohol, which was already addressed during the consenting process when the client agreed to participate in the project. The interventionist approached the subject of alcohol using a non-confrontational, non-judgmental approach consistent with a motivational interviewing philosophy (Miller & Rollnick, 2002). The discussion of drinking was introduced within a risk-reduction framework, and topics explored with a collaborative stance in contrast to an abstinence only, expert stance.

Second, the participant received feedback regarding his/her use, including typical drinks per week, heavy drinking episodes, and typical BAC. In this protocol, numbers were drawn from the participant’s responses on the DDQ, and typical BAC was calculated using a personalized BAC card based on the student’s gender and weight. This step included presentation of NIAAA’s moderate drinking guidelines (i.e., \( \leq 14 \) drinks per week for men and \( \leq 7 \) drinks per week for women). Also, the interventionist prompted exploration of the connection between current mental health concerns, negative consequences, and alcohol use. If the participant endorsed negative consequences on the BYAACQ, but did not acknowledge them during the intervention, the interventionist asked follow-up questions about more severe consequences (e.g., “I notice you endorsed
neglecting obligations related to family, friends, or work. What has this looked like for you?”).

Third, the interventionist used the readiness ruler to enhance motivation and develop discrepancies between current behavior and concerns. The readiness ruler consists of a visual ruler indicating the participant’s readiness to make changes in their alcohol use. The ruler ranges from 1 (not ready) to 10 (very ready). Depending on the rating of the participant, the interventionist asked specific questions to elicit change talk or personalized reasons for alcohol reduction. Participants might have been asked why his/her rating wasn’t even lower, or what consequences might push a student to a higher rating (e.g., “Why a 5 and not a 2?” or “I see you are at a 3. What would have to happen to move you to a 6?”). These questions allowed students to reflect on specific behaviors or negative experiences to enhance motivation for change.

The final step involves establishing goals to reduce risky alcohol use. Goals abided by the “SMART” acronym: Specific, Measurable, Attainable, Realistic, and Timely (Mannion & Keepence, 1995). In general, the interventionist shaped goals that aimed to reduce negative alcohol-related consequences, and elicited or suggested strategies to achieve the desired goal. Goals were related to drinking reduction (e.g., reducing drinking frequency or quantity) or strategies to reduce negative consequences and increase safe drinking behaviors (e.g., eating before drinking, avoiding drinking games). Refer to
column 2 in Table 2 for a description of components adapted from the public health model.

Supplementary feedback tailored to college students was provided in each of the aforementioned steps of the public health model. This information was adapted from the handbook *Brief Alcohol Screening and Intervention for College Students* (BASICS; Dimeff et al., 1999) and the intervention literature derived from it. The added content was integrated into the structure of the public health intervention. Specific additions included (a) providing personalized normative comparisons to supplement feedback on drinking patterns, based on demonstrations that correcting exaggerated norms mediates BI-related change (e.g., Borsari & Carey, 2000; Mattern & Neighbors, 2004); (b) discussion of heavy drinking and associated risks; (c) education about BAC and BAC management, deemed important based on the heavy episodic drinking characteristic of college drinkers and experiential evidence that college students do not fully understand the factors influencing intoxication; (d) discussion of college-student relevant protective behavioral strategies, based on evidence that these may mediate BI-related change (e.g., Larimer et al., 2007); and (e) use of the safer drinking toolbox to document strategies participants might use while drinking in the future. See column 3 of Table 2 for a description of components adapted from the BASICS model.
The information described above was integrated and manualized into a 40-page document. This manual was adhered to throughout the entire study, and included chapters on how to raise the subject of alcohol, provide feedback, discuss consequences of drinking, enhance motivation, reduce risk, and conclude the session. The manual also discussed common responses by students to specific components of the intervention and how the interventionist might address any concerns or ambivalence during the session.

**Control Condition**

Participants in the control condition received an informational pamphlet entitled “Drinking Facts” (Kilmer, 2000). This pamphlet includes information that is parallel to the intervention condition, including information on BAC, signs of risky use, tips for moderate drinking, and alcohol-related consequences. Following assignment to the control condition, the interventionist gave the pamphlet to the participant, and pointed to each section while briefly stating the topic heading aloud. Students were also asked if they had any questions or thoughts regarding the materials.

This informational pamphlet comparison condition controlled for nonspecifics of attention and alcohol education. Specifically, it controlled for (a) contact (though not equated for time) with the interventionist, (b) information content related to alcohol (e.g., definition of moderate drinking, drinking games, blood alcohol content), and (c) the interaction of an alcohol-focused assessment
with additional time devoted to processing information about alcohol, which might lead to increased awareness of the participant’s drinking pattern. See Table 3 for a comparison of the control and intervention condition.

**Procedures**

**Screening.** Screening took place during the initial intake appointment at the CC or PSC. As part of the standard intake procedure, clients completed the AUDIT. Therapists conducting the initial intake identified students who scored over the cutoff (≥ 8) on the AUDIT, and invited students to receive a free consultation regarding their alcohol use; this invitation was framed as participation in a pilot program for enhanced services at the CC and PSC. Students who agreed to participate completed an initial contact form providing written consent for contact by the PI. Participants that met the inclusion criteria signed up either (a) for a future appointment or (b) to be contacted to schedule an additional assessment appointment. The PI conducted all consent, intervention, and control procedures.

**Consent/baseline assessment.** The consent and baseline assessment was conducted in private offices at the CC or 804 University Avenue. Participants who attended the additional assessment appointment received information from the PI that detailed the study. This included a description of (a) the purpose of the project, (b) what was involved, (c) risks and benefits of participating, and (d) confidentiality and informed consent. Participants who agreed to participate
completed paper and pencil measures of alcohol use (i.e., DDQ, BYAACQ) as well as measures of mental health (i.e., BDI-II, PSS-4).

**Randomization.** A random number table determined randomization to condition. Randomization was stratified by gender assuring equal proportions of male and female students in each condition. Assignment to condition was determined in advance, and a confederate of the PI inserted associated intervention materials into an index card box so that the PI was blind to assignment until after the baseline assessment.

**Interventions.** Participants who were randomized to the brief intervention condition engaged in a discussion of their alcohol use as described above. They received a copy of the personalized feedback form and materials (Appendix A), and a feedback form was included in their therapy file at the Counseling Center to provide feedback to their provider. Average completion time for the baseline assessment was 11.04 minutes, and average completion time for the intervention was 46.6 ($SD = 9.3$) minutes. Participants randomized to the control condition received an informational pamphlet (see Appendix A for pamphlet sample). Average completion time was 11.2 ($SD = 6.4$) minutes. All participants completed a brief post-intervention assessment of their encounter and provided contact information for the 1-month follow-up assessment.

**Follow-up assessments.** All participants were asked to complete 1-month and 2-month online follow-up assessments. Both assessments included the DDQ-
R, BYAACQ, BDI, and PSS-4. In addition to these measures, the 1-month assessment included measurement of perceived norms (DNRF) and protective behavioral strategies (PBSS). E-mail assessments included a hyperlink to a login page, username and password that were required to access the assessment. Participants received $5 compensation for completing the 1-month follow-up and $10 compensation for the 2-month follow-up. Compensation was sent to their campus or home address via postal mail service. Participants who completed the project were enrolled into an additional drawing for a cash prize to incentivize follow-up participation. Average completion time for the 1- and 2-month assessments were 10.5 and 6.4 minutes, respectively.

**Additional data gathering.** After the 2-month follow-up, data were collected from the participant’s clinical record, including information related to presenting problems/diagnoses and treatment utilization. At the end of each semester, therapists at both sites completed paper-and-pencil measures of feasibility and acceptability of the program. Upon completion of the program, additional measure were added to assess therapists’ beliefs about challenges to recruitment and enrollment as well as perceived readiness for change within the organization.

**Internet security procedures and data management**

All participants were assigned an identification number, and measures completed at the baseline were kept in a locked filing cabinet separate from
identifying information. Following administration of 2-month follow-up measures, participant data (including data capture sheet) were manually entered into a password-protected database on a secure server. One and two month follow-up questionnaires were administered electronically and merged with previously entered data by identification number. All follow-up questionnaire data were collected on a secure web server utilizing 128-bit SSL encryption. This security layer provided an encrypted link so that all data transferred between the client machine and the server were encrypted and unreadable by a third party. The use of SSL also ensured data integrity by verifying through the use of checksums that the data were unchanged between the client and server systems. In other words, it protected participants’ data if intercepted during transmission to the server and preserved anonymity of participants.

Results

Data Preparation

All responses from participants were entered or exported into Excel files and were directly saved to a database on the secure server. Frequencies, totals, percentages, and all other statistical calculations were computed in SAS 9.1 (SAS Institute Inc., 2010). All multi-item scales (e.g., BDI, PSS-4, PBSS, AUDIT) were scored according to their published guidelines and alphas were calculated.

Data from the DDQ were aggregated to compute average number of drinks per week and number of drinking days. Heavy drinking days were derived
from one question assessing frequency of heavy drinking days within the past month. Heavy drinking days were defined as number of drinking episodes of 5 or more drinks for men and 4 or more drinks for women in the past month (Wechsler, Dowdall, et al., 1995). A total score for alcohol-related problems was calculated by summing the 24 items from the BYAACQ. Estimated blood alcohol content (BAC; Mathews & Miller, 1979) was calculated as: $BAC = \frac{\text{consumption}}{2} \times \frac{\text{GC}}{\text{weight}} - 0.016 \times \text{hours}$, where consumption = number of drinks consumed on the drinking occasion (peak), GC = gender constant (9.0 for women, 7.5 for men; Matthews & Miller, 1979), and hours = the total number of hours over which the drinks were consumed. Estimated BAC is an approximation of BAC, rather than an exact point estimate of BAC. Primary sources of estimate error include the effects of individual rates of alcohol absorption and metabolism (Davies & Bowen, 2000). Estimated BAC and BAC have been found to be significantly correlated at $r = 0.84$ (Carey & Hustad, 2002) and $r = 0.54$ (Hustad & Carey, 2005).

Four variables were derived from the data capture sheet to represent distinct aspects of treatment utilization. Attendance was summarized by three variables: (a) percent of scheduled sessions attended (sessions attended/total sessions scheduled), (b) percent of scheduled sessions cancelled (sessions canceled/total session scheduled), and (c) percent of scheduled sessions where client no-showed (sessions no-showed/total sessions scheduled). A dichotomous
variable labeled *dropout* represented premature termination (i.e., termination against clinical recommendations with or without CC notification) during the 2-month follow up period.

Baseline, 1-month, and 2-month values were assessed for outliers, linearity, and normality via visual examination of histograms and scatterplots for each level of the independent variable, as well as examining standardized scores greater than three standard deviations from the mean, and influence scores of greater than one (Tabachnick & Fidell, 2007). Skewness and kurtosis was examined for all variables to assess normality. When distributions are normal, both skewness and kurtosis are zero (Tabachnick & Fidell, 2007). Data were not transformed because skewness and kurtosis for all drinking variables were lower than 1.

**Therapists**

Nine of the original 11 therapists in the CC remained at the end of the spring 2011 semester. Almost half identified as having a psychodynamic orientation ($n = 4; 44\%$) and 78% ($n = 7$) reported using psychodynamic theory often when working with clients. Fewer therapists identified themselves as eclectic ($n = 2; 22\%$) and the remaining therapists identified their orientation as interpersonal, family-systems, and/or client-centered. One-third or fewer of therapists reported that they used behavior modification ($n = 3; 33\%$), cognitive theory ($n = 3; 33\%$), 12-step theory ($n = 1; 11\%$), and motivational interviewing
techniques ($n = 2; 22\%$). Most therapists indicated that they used risk reduction techniques for at-risk drinking ($n = 7; 78\%$). Therapists had typically practiced an average of 16.7 years ($SD = 9.4$) after being licensed and were most often educated as a psychologist ($n = 5; 56\%$) or a licensed clinical social worker ($n = 3; 33\%$). The remaining therapist reported that his/her highest level of education was a Master’s degree in social work.

Seven graduate therapists worked at PSC throughout the duration of the study. Therapists identified as practicing therapy with orientations that included interpersonal ($n = 2; 29\%$), client-centered ($n = 2; 29\%$), eclectic ($n = 2; 29\%$), and psychodynamic ($n = 1; 14\%$). These therapists did not rely on 12-step theory for clients with substance use issues, and all therapists indicated that they used cognitive theory and psychodynamic theory to guide work with clients. Most therapists indicated that they used behavior modification techniques ($n = 4; 57\%$) for mental health issues as well as motivational interviewing ($n = 5; 71\%$) and risk reduction techniques for at-risk drinking ($n = 7; 100\%$). Therapists had conducted therapy for an average of 2.4 years ($SD = 1.2$) and were most often educated with a Master’s degree of Arts or Science ($n = 4; 50\%$) or a bachelor’s degree ($n = 4; 50\%$).

**Sample Description and Baseline Comparisons**

Demographic information and AUDIT score for eligible and ineligible students were collected from each recruitment site’s clinical records, and included
gender, age, race/ethnicity, and academic year. These data were collected to
provide a description of the population of all students presenting with mental
health concerns at the CC and PSC from 2010 to 2011. Due to the limited number
of participants recruited from the Psychological Services Center \((n = 5)\),
recruitment site comparisons of demographic variables were not made. However,
demographic characteristics are listed by site in Table 4. Due to limitations of the
electronic database used at the CC, analyses conducted with demographic
information could not distinguish between eligible students receiving standard
intakes and students who received mandated, readmission intakes, and urgent
intakes. Thus, information reported includes all students who completed intake
paperwork \((N = 1253)\), rather than students who only received a regular intake.

Between-groups effect sizes (i.e., Cohen’s \(d\)) were calculated for each
dependent variable at each time point (one and two month follow-up) controlling
for baseline differences. Within-subjects effect sizes were computed on dependent
variables to estimate within-group changes over time, including the effect sizes
from baseline to one month, and the effect sizes from baseline to two months
(Morris & DeShon, 2002). Effect sizes were calculated with raw means and
standard deviations.

**Enrolled vs. population.** \(T\)-tests and Chi-square analyses were used to
examine demographic differences between participants enrolled in the study and
all students who presented for treatment at the CC during the duration of the
study. Summary demographic information of the entire population of students who presented for treatment was collected. Due to confidentiality restrictions and electronic system limitations, summary data were unable to exclude or isolate data from individuals who qualified for the study but did not enroll \((n = 128)\).

Chi-square analyses revealed that participants enrolled in the study were significantly older than students typically presenting for treatment at the CC \((t[34] = -3.11, p = .004)\). Students enrolled in the study were more likely to be seniors and less likely to be freshman compared to the entire population \((\chi^2 = 13.60, df = 4, p = .008)\). Consistent with screening criteria imposed, eligible participants had higher AUDIT scores than ineligible participants \((t [34] = 9.04, p < .001)\). There was no significant difference between the population and sample on distribution of gender or ethnicity.

**Completers versus non-completers.** A total of 9 (26%) eligible participants who consented to participate did not complete all three portions of the study. Of those that did not complete the study, 7 (20%) did not complete the 1-month follow-up, and 9 (26%) did not complete the 2-month follow-up. Consequently, the retention rate for the 1-month follow-up was 80%, while retention for the 2-month follow-up was 74%. Participants who did not complete follow-ups were unable to be contacted by the researcher and did not respond to phone or email messages. Data did not capture reasons why students did not complete electronic surveys.
T-tests and chi-square analyses compared completers and non-completers on baseline characteristics to examine potential differences in demographic characteristics, alcohol use, depressive symptoms, and perceived stress. There were no significant differences between completers and non-completers by demographic characteristics (age, gender, year in school, racial background) or any of the baseline drinking variables (drinks per week, heavy drinking episodes, peak BAC, problems). Furthermore, t tests indicated there were no significant differences on baseline measures of depressive symptoms (BDI-II) and stress (PSS) between completers and non-completers.

**Intervention versus control participants.** T-tests, chi-square analyses, and Fisher exact tests (for cells with less than 5 individuals) were used to test for equivalence on baseline characteristics and demographic variables between the two conditions (i.e., BMI and Information-only). The two conditions did not differ significantly on any of the drinking variables, protective behavioral strategies, or measures of mental health at baseline (means are shown in Tables 5 and 6). No significant differences were found between intervention and control condition participants for any of the demographic characteristics (age, gender, year in school, racial/ethnic background, and Greek membership).

**Time to follow-up.** Nearly 80% of participants \( (n = 28) \) completed the 1-month follow-up. Of those that completed the 1-month follow-up, 86% \( (n = 24) \) did so exactly 28 days post-baseline. At 35 days post-baseline (one week past the
due date), another 11% \((n = 3)\) completed their 1-month follow-up. A total of 26 participants \((74\%)\) completed the 2-month follow-up. Of those that completed the 2-month follow-up, 54% \((n = 14)\) completed it exactly 56 days post baseline. Of those who eventually completed the follow-up, 12 participants \((46\%)\) completed it one week past the due date. Therefore, a total of 26 participants \((74\%)\) completed both follow-ups on time (within 14 days of each follow-up due date).

**Statistical Analysis**

Analyses were divided to address the two primary aims: (a) examination of the feasibility and acceptability of implementing an SBI for alcohol use in a counseling center, and (b) testing the impact of SBI on alcohol use, treatment utilization, and clinical symptoms.

Gender was added as a covariate to all analyses testing efficacy due to evidence that suggests differences between males and females on measures of alcohol consumption and alcohol-related consequences (e.g., Dawson & Archer, 2006; Sugarman, DeMartini, & Carey, 2009; Wilsnack, Vogeltanz, Wilsnack, & Harris, 2000), motivation for change prior to BI (Carey & DeMartini, 2010), and differences among psychological profiles and clinical symptoms (e.g., Feingold, 1994; Gater, et al., 1998; Nolen-Hoeksema, 2001). However, despite gender differences in alcohol consumption measures and clinical symptoms, gender does not appear to influence response to BIs (e.g., Carey, et al., 2006).
Summary statistics, $t$-tests, and chi-square analyses were used to examine the feasibility and acceptability of the SBI for alcohol use. Repeated measures analysis of covariance with one between-subjects factor (condition; intervention, control) one within-subjects factor (time; baseline, 1-month, 2-month) and one covariate (gender) were used to examine the impact of the SBI on alcohol use outcomes, stress, and depressive symptoms. $T$-tests and chi square analysis were used to examine the impact of SBI on indices of treatment utilization and premature termination (i.e., dropout).

**Feasibility**

**Access to and recruitment of high-risk drinkers.** Recruitment data suggested that from March 2010 to April 2011, 163 (22%) of the students who were seeking mental health services also engaged in high risk drinking (as measured by the AUDIT). Of the 163 eligible students who reported at-risk drinking, therapists offered the program to 97 (60%) of eligible students. In other words, therapists did not offer the program to nearly half of eligible students. Archival record analysis indicated that therapists working at the PSC offered the program to 81% of eligible students, while therapists working at the CC offered the program to 57% of eligible students.

**Intervention characteristics.** Intervention characteristics (e.g., length of intervention, materials) and ease of implementation (e.g., time until first appointment) were examined as additional indicators of feasibility. First, using an
electronic scheduling system, therapists at the CC were able to book eligible students following the initial appointment. On average, participants were scheduled for and attended the alcohol intervention appointment 6.3 days (range: 0-26 days) following the original intake. Second, materials required for the intervention were easily transferred to different offices throughout the center and included (a) paper and pencil measures of alcohol use (b) feedback form (2 pages), (c) BAC card, and (d) norms tables. Third, the intervention lasted an average of 57.64 minutes, including assessment, only part of which would be included if used for non-research purposes. Finally, all therapist feedback forms were provided to therapists immediately following the intervention, and often, therapists acknowledged receipt of these forms 1-2 days following the intervention. At the 1-month follow-up, 18 (64%) of participants who completed the follow-up indicated that they spoke with their therapist about the intervention, and 4 (18%) indicated that they were the one who initiated this conversation. The extent to which participants discussed the intervention with their therapist did not differ by condition ($t [25] = 1.64, p = .11$).

**Client satisfaction.** It was hypothesized that participants assigned to the intervention condition would rate the session as more informative and valuable than the control immediately post encounter. In addition, the SEQ was included to assess post intervention ratings of the session and interventionist (SEQ) by condition. Independent samples $T$-tests were used to examine differences on the
SEQ and the 4-item measure assessing perceived value of the session (informative, enjoyable, helpful, willing to recommend). Scores on the SEQ (measuring positive and negative qualities of the session and interventionist) did not significantly differ by condition ($t [33] = -0.08, p = .94$). However, scores on the student perceptions measure differed by condition ($t [33] = 4.65, p < .0001$), such that individuals assigned to the intervention rated the session more positively ($M = 17.53, SD = 2.00$) than individuals assigned to the control ($M = 12.55, SD = 3.76$).

**Therapist perceptions.** Therapists’ beliefs about the program and the importance of addressing risky alcohol use were examined each semester using an 8-item measure modeled after similar studies (Ehrlich, et al., 2006). Following the spring semester of 2010, 4 (37%) of CC therapists completed the survey. During fall of 2010, a total of 11 (58%) CC and PSC therapists completed the survey. A total of 16 (89%) therapists at the CC ($n = 9$) and PSC ($n = 7$) completed the perceptions survey at the end of the final semester. Two therapists did not complete the survey because they no longer worked at the center. Summary statistics indicated that respondents were supportive of the program, believed the program should continue, and that the program enhanced services provided to clients ($M = 33, SD = 7.5$). A one-way ANOVA with three time points (semester 1, semester 2, semester 3) indicated that therapist perceptions of acceptability did not change over time ($F[2,27] = .40, p = .68$). Repeated measures analyses were
unable to be conducted because data were anonymous and not linked by identity. Due to small sample size, therapist perceptions were merged across all time points and an ANOVA assessed overall perceptions of feasibility and acceptability by setting. Differences between settings on perception of feasibility were marginally significant ($F[1,28] = 3.93, p = .06$), such that the site for which the study was designed (the CC) trended toward rating the program as more feasible and acceptable than the PSC.

Additional follow-up measures were administered to therapists following the study to examine difficulties with recruitment and enrollment. Analyses indicated that therapists at the CC significantly overestimated the percentage of students to whom they offered the program estimated = 79%, actual = 52%; $t [8] = 2.35, p = .05$). Therapists at the PSC did not significantly overestimate the percentage of students that they offered the program to (estimated = 79%, actual = 81%; $t [6] = -.29, p = .78$). The most frequently endorsed reason therapists offered the program to eligible students was because they valued integration of empirically supported treatment in the center ($n = 15; 94%$), they wanted to help out the program provider ($n = 14; 87%$), and they believed alcohol use was a problem whether or not the student brought it up ($n = 13; 87%$). Therapists stated that the most important reason that prompted them to offer the program was because the student brought up concerns about his/her own alcohol use ($n = 4; 27%$) and because the therapist believed alcohol use was a problem whether or
not the student brought it up \((n = 4; 27\%)\). See Table 7 for a list of all reasons that therapists reported for offering the program.

Of therapists who did not offer the program to all eligible students \((n = 12)\), the most frequently endorsed reason why they did not offer the program was because they forgot \((n = 7, 58\%)\) or because they believed other mental health issues took priority \((n = 6; 50\%)\). Therapists stated that the greatest factor impacting why they did not offer the program was because they forgot \((n = 3; 25\%)\). The majority of therapists \((n = 13; 87\%)\) believed that students who chose to participate in the program did so because they wanted help with their alcohol use and/or thought they had a problem. In addition, 93% of therapists \((n = 14)\) indicated that they believed the low interest in the program was due to the student’s belief that their drinking was not a problem, and because the program would not be useful \((n = 13; 87\%)\). Therapist beliefs about why they believed eligible students did not agree to participate are detailed in Table 8.

Five subscales from the Organizational Readiness for Change scale (ORC) were used to assess therapists’ perceptions of staff cohesiveness, communication, and stress, as well as ability for personal growth and adaptability. Compared to published means used from therapist data from 49 different agencies \((N = 458;\) Lehman, et al., 2002) therapists in this study had significantly lower scores on the stress subscale \((t [15] = -3.24, p = .006)\) and greater perceived staff cohesiveness \((t [15] = 4.02, p = .001)\). There were no significant differences between therapists
in this study and the sample described above on subscales of the ORC that measure growth, adaptability, or communication.

**Exploratory analyses.** To guide future hypotheses, additional analyses examined relationships between therapists’ self-reported referral rate and characteristics of perceived growth, adaptability, cohesion, communication, and stress. Due to the small sample, these findings should be considered with caution. A median-split was used to divide therapists as “low offerers” and “high offerers.” A low offerer was defined as a therapist who reported that he or she offered the program to 80% or less of eligible students.

* T-tests examined whether or not low and high offerers differed according to levels of growth, adaptability, or perceived stress in the workplace. Analyses indicated that although high offerers reported higher levels of growth and adaptability, as well as less perceived stress, these differences were not statistically significant. * T-tests were also used to examine whether or not the PSC (offered to 83% of eligibles) had greater perceived staff cohesion, better staff communication, and greater perceived openness to change among staff compared to the CC (offered to 61% of eligibles). Analyses indicated that there were no differences between therapists’ perceptions of staff cohesion, communication, or perceived openness by setting.

**Efficacy of intervention**
It was hypothesized that individuals randomized to the intervention condition (e.g., the BMI) would show reductions in alcohol use, including quantity (total drinks per week), peak BAC, frequency of heavy drinking days within the past month, and alcohol-related problems. This was examined using repeated measures analysis of covariance (RM ANCOVA) with one between-subjects factor (i.e., condition; intervention/control) one within-subjects factor (i.e., time; baseline/1-month follow-up/2-month follow-up), and one covariate (i.e., gender). Huynh-Feldt corrections were utilized to correct when there were violations of the assumption of sphericity, and served to alter the p level to the extent to which the assumptions of the RM ANCOVA were violated (Huynh & Feldt, 1976).

**Alcohol use.** Three separate 2 (condition) X 3 (time) repeated measures ANCOVAs were conducted on each of the primary alcohol consumption outcomes including: (a) typical drinks per week, (b) peak BAC, and (c) frequency of heavy drinking episodes. A condition by time interaction was predicted, such that participants who received the intervention would report significantly fewer drinks per week, fewer heavy drinking episodes, and lower peak BAC at 1 and 2-month follow-ups compared to participants in the control condition. Means and standard deviations are presented in Table 5.

The first test evaluated whether participants in the intervention condition reported drinking fewer drinks per week than participants assigned to the control.
Figure 3 depicts drinks per week as a function of condition for all participants at the three time points (baseline, 1-month, 2-month). The results of a repeated measures ANCOVA indicated a significant interaction of time by condition on reported consumption of drinks per week ($F[2,42] = 5.30, p = .01$). Planned contrasts indicated that participants assigned to the brief intervention consumed significantly fewer drinks per week ($M = 10.83, SD = 9.27$) compared to participants in the control ($M = 16.25, SD = 11.93$) at the 1-month follow-up ($F[1,21] = 7.01, p = .02, d = .76$). Intervention and control participants were no longer significantly different at the 2-month follow-up.

The second test evaluated whether, participants in the intervention had lower BACs than individuals assigned to the control. Analyses indicated that both conditions reported significantly lower BACs over the course of the study ($F[2,48] = 6.11, p = .004$). In other words, when compared to baseline data, all participants had decreased BACs at 1-month ($F[1,21] = 10.25, p = .003, d = .65$) and these differences remained significant at the 2-month follow-up ($F[1,21] = 9.33, p = .005, d = .65$). As shown in Table 5, baseline peak BAC averaged .20 g/dL whereas both follow-up peak BACs averaged .14 g/dL. There was no significant difference between conditions on BAC over time.

The third test evaluated whether participants assigned to the intervention condition reported fewer heavy drinking episodes compared to those in the control condition. Like BAC, all participants reported reductions in heavy
drinking episodes over time ($F[2,48] = 7.37, \ p = .002$). Mean number of heavy drinking episodes at baseline was 7 per month, dropping to 4.79 at the 1-month follow-up and 4.35 at the 2-month follow-up (See Table 5). All participants significantly reduced their heavy drinking episodes at 1-month ($F[1,24] = 10.92, \ p = .003, \ d = .49$) and 2-months following baseline assessment ($F[1,24] = 14.95, \ p = .0007$).

**Alcohol-related problems.** Group differences between mean scores on the BYAACQ across time were examined via a 2 (condition) X 3 (time) RM ANCOVA. A condition by time interaction was predicted, such that participants who received the intervention would have significantly lower scores on the BYAACQ than participants in the control condition at 1 and 2-month follow-ups. Analyses indicated that there was a main effect of time, such that both conditions showed reductions in alcohol-related problems over the two-month period ($F[2,42] = 12.43, \ p < .0001, \ d = .97$; see means in Table 5). A marginally significant time by condition interaction, suggested that individuals in the intervention condition trended towards having fewer alcohol-related problems at the 1-month follow-up compared to controls, ($F[1,21] = 3.97, \ p = .059, \ d = 1.49$). There was no significant difference between intervention and control conditions at 2-months.

**Secondary Outcomes**
Treatment utilization. Additional outcome measures included indices of treatment utilization (rates of attendance, cancelation and no-show appointments in addition to treatment drop-out) and client satisfaction. First, it was expected that participants assigned to the brief intervention would have higher rates of attendance than participants in the control group. Second, it was expected that participants assigned to the brief intervention would have significantly lower cancelation rates and no-show appointments compared to participants in the control condition. Independent samples t-tests examined differences between the two conditions on attendance, cancelation and no-show rates over the 2-month follow-up period. Because a significant relationship between gender and treatment utilization did not exist, gender was not used as a covariate in these analyses. Additionally, chi square analysis was used to examine condition differences in treatment dropout.

Analyses suggested that participants attended an average of 3.5 appointments ($SD = 3.7$, range = 0-16) over the two-month period, no-showed for 9% of sessions, and canceled 11% of appointments. T-tests indicated that attendance rates did not differ by condition, nor did no-show or cancelation rates (all $p$ values > .05). Additionally, there was no difference between intervention and control on treatment dropout 2 months following the intervention (Dropout = 33% versus 13%; $\chi^2 = 1.54$, $df = 1$, $p = .21$).
Clinical symptoms. Secondary analyses also examined relationships between condition assignment and clinical symptoms (scores on the BDI-II and PSS), via use of 2 (condition) x 3 (time) RM ANCOVAs covarying for gender. Although previous research has indicated positive relationships between alcohol use and clinical symptoms, these data are correlational and do not address causality. Due to the largely unexplored relationship between alcohol SBI and clinical symptoms, we assessed the relationship between depressive symptoms and condition. Results indicated that there was no main effect of time on depressive symptoms, and no significant difference by condition on self-reported depressive symptoms for the duration of the study. Means are reported in Table 6.

Similarly, a 2 (condition) X 3 (time) RM ANCOVA examined differences between conditions on self-reported measures of stress (i.e., PSS-4). A condition by time interaction was expected, such that participants who were assigned to the intervention condition would have significantly lower scores on the PSS-4 compared to participants in the control condition at one and two month follow-ups. Analyses indicated that there was a significant time by condition interaction ($F[2,42] = 4.07, p = .04$). Planned contrasts indicated that participants assigned to the intervention condition had significantly less perceived stress at the 2-month follow-up when compared to controls ($F[1,21] = 4.40, p = .048, d = 1.30$).

Exploratory Tests of Mediation
Because there was a significant effect of condition on perceived stress at 2 months, additional analyses were conducted to explore whether alcohol use was a mediator of this relationship. These analyses were conducted using Baron and Kenney’s guidelines for assessing mediation (1986) via use of linear regression.

In consideration of temporal prerequisites required for assessing mediation (Nock, 2007), examined mediators were assessed prior to outcome variables, but following the intervention. According to Baron and Kenney (1986), a variable is a mediator if (a) there is a significant relationship between the independent variable (condition) and the dependent variable (assessed at 2-months), (b) there is a significant relationship between the independent variables (condition) and the hypothesized mediators (assessed at 1-month), and (c) the relationship between the independent variable (condition) and the dependent variable (perceived stress) is significantly reduced or eliminated when including the mediator in the model.

Regression analyses were used to assess meditational relationships. It was first examined whether drinks per week mediated the relationship between condition and perceived stress. The first two criteria described by Baron and Kenney (1986) were met and are described in previous analyses. First, the previous analysis examining the relationship between the independent variable (condition) and dependent variable (PSS), indicated that condition significantly predicted perceived stress at the 2-month follow-up (see above). Second, previous analyses indicated that there was a significant effect of condition on
drinks per week at 1 month, meeting the second criteria for testing mediation. Additionally, analyses indicated that there was a significant association between drinks per week at one-month and perceived stress at two-months \((r = 41, p =.04)\). Finally, when the proposed mediator (drinks per week) was controlled for within the analysis, the relationship between condition and perceived stress at the two-month follow-up was no longer significant, \((F[1,20] = 2.83, p = .12)\). In other words, drinks per week mediated the relationship between condition and perceived stress. Protective behavioral strategies and drinking norms were not examined as mediators of condition on alcohol variables because there was no effect of condition on alcohol outcomes at 2 months post-intervention.

**Additional examination of proposed mediators**

The two proposed mediators (protective behavioral strategies, drinking norms) were examined to determine whether there were differential changes by condition. Two 2 (condition) X 2 (time) RM ANCOVAs examined differences between conditions on use of protective behavioral strategies (PBSS) and perceived norms (DRNF), both measured at 1-month. A main effect of time was found on protective behavioral strategies, such that all participants significantly increased use of protective behavioral strategies from baseline to one-month by approximately 14% \((F[1,18] = 12.11, p = .003, d = .76)\). Analyses of perceived drinking norms indicated a time by condition interaction, such that individuals assigned to the intervention had lower perceived norms estimates one month after
the intervention compared to controls, a reduction of 25% versus an increase of 11% among controls \((F[1,24] = 4.32, p = .048, d = .49)\). See Table 5 for means and standard deviations of mediators at baseline and 1-month follow-up.

**Discussion**

The primary goals of the current study were to examine the feasibility, acceptability, and efficacy of implementing an SBI in a college counseling center. Specifically, this study examined the impact of an SBI on participants’ alcohol use, alcohol-related consequences, treatment utilization, and mental health symptoms.

**Feasibility and acceptability**

Overall, this pilot test provides mixed evidence for the feasibility of implementing an SBI for alcohol use in a college counseling center, with the primary challenges being in the recruitment and enrollment of eligible students. Examination of the feasibility of this intervention can be evaluated on 4 dimensions (a) structural characteristics of the intervention, (b) access to eligible students (c) client satisfaction, and (d) staff perceptions and recruitment.

First, this intervention was implemented with relative ease within a counseling setting. Specifically, the intervention was conducted within a 50-minute hour, which is typical of college counseling centers across the United States. The materials necessary to conduct an SBI were minimal, and all of them could be photocopied and easily transferred to different offices. This utilitarian
design could facilitate interventions in locations that require therapists to work within shared or limited office space. Also, this intervention has been manualized, and allowing any interested provider to learn the techniques and content surrounding the intervention should he/she choose to do so.

Second, the counseling center setting yielded a large number of eligible students. Nearly one quarter of students who presented for mental health treatment also indicated high-risk drinking measured by a screening tool (AUDIT) that is commonly used in treatment settings. This is similar to archival data collected at Syracuse, which indicated that 33% of students screened positively for at-risk drinking from 2005-2008 (Seigers & Carey, 2010). Of the students that enrolled in the study, nearly 30% were also using psychotropic medications. Often, use of alcohol in conjunction with psychotropic medications is not recommended, and reducing alcohol use among these students may be particularly important. Thus, there were large numbers of students for which this intervention may have been useful, and the prevalence of psychotropic medication use increases the importance of reaching this population.

Using a more sensitive screening tool may have yielded an even greater number of students who engaged in at-risk drinking. Recent data suggest that an abbreviated version of the AUDIT, called the AUDIT-C, might be a more sensitive tool to detect at-risk drinking behavior. For the AUDIT-C, an appropriate cutoff score for college males is a total score of 7, while a total score
of 5 should be used for college females (DeMartini, 2011). Future research might consider use of the AUDIT-C in detecting at-risk drinking behavior, to maximize the center’s abilities to detect at-risk drinking.

Third, students reported high satisfaction with the intervention and engaged in dialogue about the intervention with their primary mental health provider. Client satisfaction data clearly indicated that students who were assigned to the intervention condition found it more valuable and informative compared to students who were placed in the information-only condition. Students in the intervention also reported that they would be more willing to recommend the intervention to friends, and this may be particularly important within a population whose drinking behavior exists within a social context (Real & Rimal, 2007). The multidimensional assessment of satisfaction established that the session experience was equally positive, comfortable, and attitudes towards the interventionist were equivalent across intervention and control conditions. Thus, it was the brief intervention content that was appreciated by students, not just the opportunity to talk about alcohol. This is consistent with the finding that mandated students are more satisfied with brief interventions than with alcohol-education only (Borsari & Carey, 2005).

In addition to student approval of the intervention, the majority of students spoke with their therapists about the intervention, regardless of which condition they were assigned. This contact may facilitate longer-lasting reductions in
alcohol use. Counseling centers are unique in that they often have multiple points of individual and personalized contact with students, unlike residence life, freshman seminars, or health centers. Because therapists can reinforce and serve as a “booster” to the intervention, counseling centers might be able to provide enhanced treatment and prolong treatment effects. Our data suggest that therapists and students engaged in dialogue regarding the alcohol use intervention, and future research might examine the content of this dialogue, integrate longer follow-ups by therapists, or test additional feedback or intervention sessions that are implemented by the primary mental health provider.

Fourth, there were clear recruitment and enrollment difficulties. The intervention was clearly valued by students and staff, could be integrated into most 30-50 minute sessions, and required little time or effort from staff therapists. Therapists rated the program positively on perceived value and helpfulness, but these beliefs did not correspond with the recruitment efforts identified from appointment records. Therapists at the primary recruitment site failed to offer the program to nearly half of all eligible students, and enrollment rates at the counseling center were lower than most enrollment rates published in similar studies conducted in health centers (see Seigers & Carey, 2010 for review). In other words, despite high ratings of acceptability, therapists did not offer the intervention nearly half of the time, and may have also struggled to set up positive expectancies in clients that might have increased enrollment.
Based on our data, it is difficult to clearly determine reasons for discrepancy between self-reported beliefs and recruitment efforts. It is possible that therapists provided socially desirable answers on measures of acceptability and privately harbored negative expectancies or perceptions of the program. What is clear is that therapists did not offer the program to a large portion of eligible students despite knowledge that the student was engaging in at-risk alcohol use. Post-implementation data indicated that many therapists offered the program to “help out” the provider. This suggests that it is important to facilitate relationships between the provider and staff. In this study, the provider promoted contact by reaching out to staff during on-site office hours held throughout the duration of the project. In addition, the majority of therapists also offered the program because the student stated he/she had concerns about his/her alcohol use, the therapist believed use was a problem, and/or the therapist valued integration of empirically supported treatment in practice.

Relying on a student’s verbalization of alcohol-related problems or concerns may be misleading, as students may minimize alcohol-related consequences. For instance, not all students perceive alcohol-related actions or behaviors such as vomiting, waking up in someone else’s bed, or leaving parties alone as negative or risky outcomes. Furthermore, consequences like blackouts and physical or social embarrassment have been rated as neutral or even positive by some students (Mallett, Bachrach, & Turrisi, 2008). Offering the program
because a student vocalizes concerns or because the therapist believes there is a problem (based on the presenting student) may not capture the degree to which the student is experiencing alcohol-related problems. Relying on objective measures that assess at-risk drinking, in addition to one’s own beliefs and observations, can minimize the effect of student biases and increase case identification.

It is unclear why some eligible students decided not to enroll in the program. Overall, nearly half of eligible students agreed to be contacted for more information about the study, but 35% enrolled and completed the study. Similar studies conducted in health centers have reported participation rates (of those eligible) ranging from 17-93% (Dimeff & McNeely, 2000; Fleming et al., 2009; Kypri et al., 2004; Kypri et al., 2005; Kypri et al., 2008; Martens et al., 2007; Schaus et al., 2009). Interestingly, studies with participation rates under 50% utilized onsite staff for recruitment of participants (e.g., counseling staff, primary care practitioners), as opposed to research staff (Fleming et al., 2009; Martens et al., 2007; Schaus et al., 2009).

Although follow-up data were not collected from students regarding this issue, therapists indicated that students who enrolled appeared to want help with their alcohol use, and those that declined did not believe they had a problem, nor did they believe the program was useful. Provided that the therapists’ perceptions regarding some students’ reluctance to enroll in the program were accurate, there
are several ways that therapists may be able to modify some of these beliefs to improve enrollment.

First, motivational interviewing is a strategy that has been used to address ambivalence related to risky or hazardous substance use patterns. Research shows that using motivational interviewing techniques even in the early stages of treatment (e.g., when offering the program) can have a positive impact on retention and engagement (Carroll, et al., 2006). Less than 30% of therapists at the CC reported that they used motivational interviewing. Considering that many students may not perceive alcohol-related problems negatively (Mallett, et al., 2008) this may be one strategy to enhance motivation for change and increase their likelihood of students choosing to take part in the intervention.

Second, therapists were instructed to advertise the intervention as a brief “consultation” for students who drink “regularly.” In order to set up positive expectancies of the program, therapists were asked to inform students that many other students presenting on campus had found the program helpful. Some evidence suggests that there is a relationship between expectancies and client improvement (see Dew & Bickman, 2005 for review). Other research indicates that high expectations (i.e., positive) are associated with keeping appointments (Shuman & Shapiro, 2002). Therapists’ acknowledgement that students did not believe they had a “problem” and would not find the program useful, suggests that the expectancies set up by therapists may have implied the program was for
“problem drinkers” as opposed to “regular drinkers.” Unfortunately, our data did not capture the actual content of the communications directed towards students regarding the program. Future research might consider qualitative analysis of therapist and student dialogue regarding (a) the therapist’s “pitch” for the study, and (b) the student’s reaction. Overall, future research is needed to understand how barriers to dissemination might be addressed, how to improve positive expectancies established by the therapist, as well as other ways to facilitate or incentivize therapist participation.

Efficacy

In addition to examination of feasibility and acceptability of SBI for alcohol use, this pilot study was the first test of an SBI for at-risk drinkers in a college counseling center. This intervention was designed to reduce alcohol consumption (drinks per week, heavy drinking episodes, peak BAC) and alcohol-related problems. Data from this study indicated that 1 month following the intervention, students assigned to the intervention consumed significantly fewer drinks per week and had lower drinking norms estimates compared to controls. Two months following the intervention, students assigned to the intervention had significantly lower perceived stress than controls. These findings support our hypotheses in part, and are consistent with similar interventions that have been implemented in college health centers, used with mandated students, and student volunteers (Carey, et al., 2006; Carey, et al., 2007; Seigers & Carey, 2010).
Despite clear reductions in drinks per week among those assigned to the intervention, it is notable that means of all drinking variables trended towards decreased alcohol use. The following sections describe potential reasons that all study participants showed reductions on the remaining alcohol variables, recommendations for future research, as well as limitations to the study.

Our data indicated that all participants significantly reduced their peak BAC, heavy drinking episodes, and alcohol-related problems over the 1 and 2-month follow-up. There are several possible explanations regarding why changes were observed for all participants, and why intervention effects were not detected. First, our analyses were underpowered to detect even a moderate to large effect size. In this study, between subject’s effect sizes ranged from .04-1.53, and within-subject effect sizes for the intervention group were all moderate to large. Given these effect sizes, it seems likely that with a larger sample size statistical tests would have revealed significant results. Notably, effect sizes for this study were even larger than those reported in previous studies using a similar design (BI vs. minimal intervention; Dimeff & McNeely, 2000; Kypri et al., 2004), suggesting that the impact of this intervention may have an even greater effect on students seeking mental health treatment. In sum, a larger sample may be needed to detect significant differences between the intervention and control conditions.

Second, previous studies examining assessment reactivity suggest that assessment alone can reduce risky alcohol use among college students (e.g.,
Kypri, Langley, Saunders, & Cashell-Smith, 2006). Similar to the current study, Kypri et al. (2006) conducted a four-arm randomized control trial with students presenting for treatment at a college health center. This study suggested that conducting even brief assessments of alcohol use reduces use over time, and may obscure or underestimate treatment effects. Thus, student’s reactivity to the baseline assessment may explain the decrease on alcohol use variables over the two-month period, obscuring the intervention effect. Future research might consider use of a randomized Solomon four-group design (Dimitrov & Rumrill, 2003). This design compares two control conditions and two intervention conditions with and without pretest assessments. This allows researchers to examine the impact of the pretest or pre-assessment on participant outcomes.

Third, research indicates that brief interventions perform significantly better than information-only controls, and typical controls in trials like this include minimal contact with a researcher or interventionist. In the control condition, students were asked if they had questions, thoughts, or feelings about the pamphlet. It is possible that the limited interactive nature of our control condition resulted in some engagement in the control materials, and this engagement enhanced their motivation to change, and/or increased likelihood of risk reduction behavior. Engagement may have increased the depth of processing of alcohol-related information, thereby leaving a more durable memory trace for use later on (Craik & Lockhart, 1972). This pamphlet also included gender and
weight specific information (e.g., BAC) and may have been perceived as self-relevant, resulting in greater recall of alcohol-related material, and subsequent use (see self-reference effect; Symons & Johnson, 1997). Indeed, variables that had reductions across both groups were topics that were included in both intervention and control conditions (e.g., protective behavioral strategies, BAC), unlike corrective norms estimates which were included only in the intervention.

Finally, it is unclear what alcohol use interventions or risk-reduction techniques therapists may have utilized themselves following the intervention. Providers who referred eligible students and students who enrolled in the study may have been particularly motivated to change alcohol-use behavior. Therapists who referred more often may also have been more likely to follow-up with students following the intervention. These data do not support any significant differences between high and low referrers on perceptions of acceptability, and we do not have data that indicate the content of therapist-client interactions before and after referral. Follow-up data suggest that a large portion of students did engage in discussion about their alcohol intervention. The content of those discussions and potential risk-reduction techniques that may have been used by therapists is unknown, and may have been efficacious in decreasing student’s alcohol use over time. Students who enrolled in the study may also have been particularly motivated to change their alcohol use behavior, as it was clearly identified as an “optional alcohol use consultation.” Consequently, there may
have been a self-selection bias such that students who enrolled were already seeking to change their alcohol use behavior prior to the intervention. Future research might consider assessment of initial intent to change and/or interest in learning about decreasing risky alcohol use behavior, as well as alcohol-use interventions that may have been used throughout the course of treatment by the provider.

Secondary hypotheses were partially supported. It was expected that participants who were in the intervention condition would have fewer clinical symptoms and utilize treatment more often (with fewer cancelations and no-shows) than participants in the control. Students who were in the intervention condition reported less stress at the 2-month follow-up compared to students who were in the control condition. Data supported a meditational effect of drinks per week on this relationship. In other words, the intervention reduced drinks per week, which, in turn, reduced student’s perceived stress. This novel finding expands upon previous findings positive associations that have been shown between alcohol use and perceived stress (e.g., Reed, Prado, Matsumoto, & Amaro, 2010). Specifically, our findings suggest that interventions can reduce alcohol use, and this reduction in alcohol use translates into lower psychological distress two months later.

Overall, students did not report decreased depressive symptoms over time. Mental health diagnoses suggested that only 34% of students had a diagnosis of
depression. With such a small sample, measuring depressive symptoms may not adequately capture student’s presenting symptoms. Similarly, students had an average of 3-4 sessions of therapy by 2-months. With so few sessions, detecting differences in therapy session cancelations, no-shows, attendance or dropout would be challenging. A greater sample with longer follow-ups might provide more data to detect any effects of alcohol use or condition on treatment utilization.

**Limitations.** There were several limitations to this study. First, a priori power analyses suggested that a much larger sample size would be needed to detect a small to moderate effect. The ability to reject the null hypothesis, or find an effect given that one exists, depends on (a) the specified alpha level, (b) the predicted or estimated effect size, and (c) the sample size. Typically the larger one’s sample, the more likely one will find an effect. Post hoc analyses indicated this study was underpowered to find a small to moderate effect. The study was open for data collection for one full year. Due to time and resource limitations, as well as unanticipated barriers to recruitment, an adequate sample could not be obtained to establish adequate power.

Second, data suggested that a little over half of eligible students were offered the program. Although communication with both administrative and therapy staff prior to implementation suggested that staff were supportive of the project and would facilitate referrals, a large portion of students were not provided the
opportunity to participate. Formal quantitative and qualitative methods (e.g., survey data, semi-structured interviews) utilized prior to implementation might have addressed barriers that may not have been identified prior to implementation. Clear and specific identification of barriers, concerns or beliefs prior to program implementation may have improved therapist referral rates and allowed researchers to target specific barriers to dissemination.

Third, assessment data relied primarily on self-report of quantity and frequency of alcohol consumption. Although some research has verified the reliability and validity of self-report measures (see Del Boca & Darkes, 2003 for review), some research highlights inconsistencies between self-report and other measures of alcohol consumption (Babor, Steinberg, Anton, & Del Boca, 2000; Poikolainen, Podkeltnova, & Alho, 2002). Despite these inconsistencies, other assessment techniques (like collateral informant reports) are susceptible to the same errors of self-report (Del Boca & Noll, 2000; Laforge, Borsari, & Baer, 2005). Furthermore, biological methods used to assess alcohol consumption often lack sensitivity and specificity, and may utilize more monetary and time resources (Carroll, 1995). Use of collateral informant methods and/or more invasive biochemical techniques may have violated participants’ sense of privacy and comfort within the counseling environment.

Fourth, like many similar studies conducted within college health centers (see Seigers & Carey, 2010 for review), this sample was primarily Caucasian and
female. Findings from this study may not generalize to ethnic minority students presenting for mental health treatment across the United States. Considering that the student population at Syracuse University is predominantly Caucasian and that drinking rates are typically lower among ethnic minorities, it is not surprising that the current sample was primarily comprised of Caucasian students. Addressing the efficacy of SBIs in ethnic minority samples that endorse hazardous drinking and are presenting with mental health concerns would be informative.

Finally, to aid in efficiency and protect confidentiality, the PI was the program administrator, interventionist, and conducted all assessments involving program participants and staff. The PI’s clear engagement in program tasks that are typically conducted by more than one individual may have influenced participants to answer in a more socially desirable way than they would have otherwise. For instance, initial baseline assessments and post-encounter measures were administered in a private room with the interventionist. Students may have felt pressured to answer favorably to questions assessing their perceptions of the session and interventionist. Although recommended strategies were utilized to reduce the “good subject tendency,” (e.g., privacy to complete measures, putting post-encounter evaluation in an envelope, guaranteed anonymity to therapists), students and therapists may have exaggerated their receptivity and acceptance of the program.

Summary
This pilot study provided the first controlled test of SBI for risky alcohol use within a college counseling center. This intervention was easily integrated into office procedures. Importantly, students reported that it was informative, valuable, and they would recommend it to friends. Several challenges to recruitment were identified, and future research might examine barriers to dissemination as well as strategies for setting up positive expectancies for both providers and students. The acceptability of this intervention was high, as reported by both clients and staff therapists. The intervention resulted in significant reductions in measures of alcohol use relative to an attention-control condition. Also, reductions in perceived stress were reported by intervention participants at follow-up, providing preliminary evidence of a generalized effect of the brief alcohol intervention on psychological distress. Although largely underpowered, this study provides a promising first glance at an additional setting to disseminate interventions for at-risk alcohol use among college students. These findings support further efforts to integrate SBI for alcohol risk-reduction in university mental health and counseling centers.
Appendix A

Intervention Materials

**Drinking Patterns:**
I drink alcohol on ______________ days in a typical week.
I typically drink _______________ drinks per week.

**Normative Comparisons:**
My typical week of drinking is greater than ____________% of college males/females nationwide.
This is greater than ____________% of college males/females at Syracuse University.

**How Much Is Too Much?**
If you drink more than this, you are at risk for alcohol-related illness and/or injury. You need to stay within the limits per week AND per day. To stay within the daily and weekly limits may require non-drinking days each week.

<table>
<thead>
<tr>
<th></th>
<th>Drinks Per Week</th>
<th>Drinks Per Occasion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Men</td>
<td>More than 14</td>
<td>More than 4</td>
</tr>
<tr>
<td>Women</td>
<td>More than 7</td>
<td>More than 3</td>
</tr>
<tr>
<td>Age 65+</td>
<td>More than 7</td>
<td>More than 3</td>
</tr>
</tbody>
</table>

**Level of Intoxication:**

**BAC** or **Blood Alcohol Content** is the amount of alcohol that is in your blood stream. There are four main factors that influence BAC:

1. Number of drinks you have
2. Amount of time over which they are consumed
3. Your weight
4. Your gender

Based on my heaviest night of drinking, I had ____________drinks over ________hours. This makes my highest BAC in the past month ________. 
Drinking alcohol has impacted me in the following ways in the last month:

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

How does alcohol relate to mental health?

- Sleep
- Depression
- Anxiety

Readiness Ruler

<table>
<thead>
<tr>
<th>Not ready</th>
<th>Very ready</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3 4 5</td>
<td>6 7 8 9 10</td>
</tr>
</tbody>
</table>

GOAL(S) FOR SAFER DRINKING:

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________
RINKERS TOOLBOX


Personalized Blood Alcohol Content (BAC) Card
If you drink, stay in this range
.02-.03 = slight feelings of euphoria, social inhibitions lowered somewhat
.04-.05 = feel more relaxed, talkative, less self-conscious, minor
impairments in memory and reasoning.

Caution, negative effects in this range
.06-.07 = social judgment impaired, lowered inhibitions
.08-.09 = legal intoxication in NY, loss of judgment and self-control, risk
of nausea
.10-.14 = legal intoxication in all states, impairment of muscle
coordination & reaction time (driving skills), slurred speech
.15-.17 = balance and movement impaired, vomiting may occur

STOP DRINKING, dangerous effects in this range
.18-.19 = feelings of anxiety, decision-making impaired
.20-.24 = memory blackout likely, loss of recall for events during
intoxication
.25-.29 = severe motor and sensory disturbances, semi-stupor
.30+ = loss of consciousness likely, risk of death

<table>
<thead>
<tr>
<th># of drinks</th>
<th>Hours Spent Drinking</th>
<th>175 lbs</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0.021</td>
<td>1.0</td>
</tr>
<tr>
<td>1</td>
<td>0.027</td>
<td>1.4</td>
</tr>
<tr>
<td>2</td>
<td>0.054</td>
<td>3.6</td>
</tr>
<tr>
<td>3</td>
<td>0.098</td>
<td>6.6</td>
</tr>
<tr>
<td>4</td>
<td>0.156</td>
<td>10.3</td>
</tr>
<tr>
<td>5</td>
<td>0.230</td>
<td>15.7</td>
</tr>
<tr>
<td>6</td>
<td>0.337</td>
<td>22.6</td>
</tr>
<tr>
<td>7</td>
<td>0.475</td>
<td>32.6</td>
</tr>
<tr>
<td>8</td>
<td>0.647</td>
<td>46.5</td>
</tr>
<tr>
<td>9</td>
<td>0.848</td>
<td>61.8</td>
</tr>
<tr>
<td>10</td>
<td>1.043</td>
<td>79.2</td>
</tr>
<tr>
<td>11</td>
<td>1.265</td>
<td>98.9</td>
</tr>
<tr>
<td>12</td>
<td>1.525</td>
<td>122.9</td>
</tr>
<tr>
<td>13</td>
<td>1.819</td>
<td>153.1</td>
</tr>
<tr>
<td>14</td>
<td>2.159</td>
<td>187.5</td>
</tr>
<tr>
<td>15</td>
<td>2.537</td>
<td>229.6</td>
</tr>
</tbody>
</table>

One Drink:
- 12 oz beer
- 1 can or bottle
- 4 oz wine
- 1 small glass
- 1 oz liquor
- 1 shot

Male 175 lbs
Feedback form: Inserted into Client file following intervention condition

**CHOICES  Brief Intervention Feedback for:**

______________________________

**Consumption and Consequences**
The student indicated typical consumption of _______ standard drinks per week. This number corresponds to the _______ percentile of males/females at Syracuse University.

This student reported ____________ alcohol-related consequences in the following domains:

- **Physical/health**
  - hangover, blackout, fatigue, sick, weight gain, driving, passed out, tolerance, withdrawal
- **Social**
  - said/done embarrassing things, relationship problems, neglecting obligations, bad behavior
- **Academic**
  - school work suffered, missed class
- **Self-control**
  - foolish risks, unplanned drinking, impulsive behavior, too much time drinking, feel bad about self, failure to limit drinking

**Dependence Risk**

The student endorsed ___ of the 3 dependence symptoms on the AUDIT:

- inability to stop drinking once started
- failure to fulfill role expectations because of drinking
- morning drinking

**Recommendations**

The student received a total score of _____ on the AUDIT administered at intake. According to WHO guidelines, this score suggests the following response:

- simple advice focused on reducing risky drinking (scores of 8-15)
- brief counseling and continued monitoring (scores of 16-19)
diagnostic evaluation for alcohol dependence (scores of 20 or higher)

This student received a brief alcohol intervention on ___________.

the brief alcohol intervention is appropriate given the student’s AUDIT score

the student may also benefit from a referral to OPTIONS or to an alcohol treatment program
**Drinking Facts**

**Signs of Risky Use**
- Blacking out
- Passing out
- Nausea
- Missing class/work
- Drinking and driving
- Not able to stop when you want to
- Fights or arguments
- Doing things you wouldn’t do when sober
- Doing things you regret when sober

You can still have some problems with thinking, memory and reasoning 4-8 hours after a night of heavy drinking.

The alcohol in champagne and other “bubbly” drinks absorbs more quickly, so you get drunk faster when you drink them.

**Put Yourself in Control**
- Learn about alcohol and its effects.
- Learn your limits.
- BYOB.
- Don’t accept open containers from others.
- Bring enough money for a cab.

**Plan ahead!**

**If you choose to drink, you can minimize the negative consequences.**

- At the very early stages of drinking, alcohol can produce an enjoyable “buzz” effect.
- But when the blood alcohol level (BAL) reaches .05% to .06% the positive effects decrease and the negative effects increase.
- See the chart at right to estimate how many drinks you could consume over a range of time without going over a BAL of .06%.
- If you drink less than the amount on the chart when you drive, stick with that.
- If you drink more than these amounts and are thinking about cutting back, this information may help.

**What’s a “Drink”**?

Each of these contains the same amount of alcohol:
- 12 oz. beer
- 10 oz. microbrew
- 8 oz. malt liquor
- 4 oz. wine
- 15 oz. 80-proof liquor
- 1 oz. 100-proof liquor

A 120-pound woman who has 5 drinks over 3 hours will be twice as intoxicated as a 160-pound man who drinks the same amount.

Under NO circumstances should a person drink and drive.

Alcohol is made up of empty calories that are harder to burn off than regular calories.

**Tips for Moderate Drinking**
- Set a limit before you start drinking.
- Space and pace your drinks.
- Keep track of what you’ve had.
- Eat before and while you’re drinking.
- Avoid drinking games.
- Drink for quality, not quantity.

Vomiting doesn’t get rid of the alcohol in your blood.

One beer has the same number of calories as a hot dog (about 150).
Figure 1. Sampling and Flow of Subjects Through a Brief Intervention for Alcohol Use: Counseling Center

Mental Health Intake
\( (N = 734) \)

Eligible for CHOICES program (AUDIT ≥ 8)
\( (n = 147) \)

Not offered CHOICES program by provider \( (n = 63) \)

Ineligible for CHOICES program:
AUDIT < 8, \( n = 551 \)
Psychiatric symptoms, \( n = 10 \)
Mandated, \( n = 26 \)

Offered CHOICES program by provider \( (n = 84) \)

Agreed to be contacted
\( (n = 45) \)

Declined participation
\( (n = 39) \)

Did not attend appointment:
Unable to schedule initial appointment, \( n = 8 \)
No-showed for appointment, \( n = 3 \)
Canceled appointment, \( n = 4 \)

Attended appointment
\( (n = 30; 67\% \text{ of eligible}) \)

Intervention Condition
\( (n = 11) \)

Control Condition
\( (n = 19) \)

1-Month Follow-Up
\( (n = 24; 80\% \text{ retention}) \)

2-Month Follow-Up
\( (n = 22; 73\% \text{ retention}) \)

Treatment as usual

Treatment as usual

Treatment as usual

Treatment as usual
Figure 2. Sampling and Flow of Subjects Through a Brief Intervention for Alcohol Use: Psychological Services Center

Mental Health Intake
(N = 65)

Eligible for CHOICES program (AUDIT ≥ 8) (n = 16)  
Ineligible for CHOICES program: AUDIT < 8, n = 45
Community client, n = 2
Psychiatric symptoms, n = 2

Offered CHOICES program by provider (n = 13)  
Not offered CHOICES program by provider (n = 3)  
Treatment as usual

Agreed to be contacted (n = 8)  
Declined participation (n = 5)  
Treatment as usual

Did not attend appointment: Unable to schedule initial appointment, n = 1
Canceled appointment, n = 2

Attended appointment (n = 5; 31% of eligible)

Intervention Condition (n = 4)  
Control Condition (n = 1)

1-Month Follow-Up (n = 4; 80% retention)  
2-Month Follow-Up (n = 4; 80% retention)
Figure 3. Reported Drinks Consumed Per Week

Note. Represents raw means and standard deviations. Bars represent standard error. *p < .05,
## Table 1. Assessment Scheme

<table>
<thead>
<tr>
<th>Construct</th>
<th>Measure</th>
<th>Number of Items</th>
<th>Mental Health Intake</th>
<th>Baseline</th>
<th>Post-Intervention</th>
<th>1 Month Assessment</th>
<th>2 Month Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demographic Information</td>
<td>CCSQ</td>
<td>25</td>
<td>C</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alcohol Abuse</td>
<td>AUDIT</td>
<td>10</td>
<td>C</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression</td>
<td>BDI</td>
<td>21</td>
<td>C</td>
<td></td>
<td></td>
<td>P</td>
<td>P</td>
</tr>
<tr>
<td>Perceived Stress</td>
<td>PSS-4</td>
<td>4</td>
<td>P</td>
<td></td>
<td>P</td>
<td>P</td>
<td>P</td>
</tr>
<tr>
<td>Drinking Pattern</td>
<td>DDQ</td>
<td>6</td>
<td>P</td>
<td></td>
<td>P</td>
<td>P</td>
<td>P</td>
</tr>
<tr>
<td>Drinking Consequences</td>
<td>BYAACQ</td>
<td>24</td>
<td>P</td>
<td></td>
<td>P</td>
<td>P</td>
<td>P</td>
</tr>
<tr>
<td>Post-Intervention Feedback</td>
<td>SEQ</td>
<td>18</td>
<td></td>
<td></td>
<td>P</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived Norms</td>
<td>DRNF</td>
<td>3</td>
<td>P</td>
<td></td>
<td>P</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protective Behavioral Strategies</td>
<td>PBSS</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treatment Utilization</td>
<td>--</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>C</td>
</tr>
</tbody>
</table>

*Note. C = Chart, P = Participant, CCSQ = Counseling Center Student Questionnaire, AUDIT = Alcohol Use Disorders Identification Test, BDI = Beck Depression Inventory, PSS-4 = Perceived Stress Scale, DDQ = Daily Drinking Questionnaire, BYAACQ = Brief Young Adult Alcohol Consequences Questionnaire, SEQ = Session Evaluation Questionnaire, DRNF = Drinking Norms Rating Form, PBSS = Protective Behavioral Strategy Scale*
Table 2. Components of intervention: Public Health Model combined with supplementary components of BASICS

<table>
<thead>
<tr>
<th>Step 1: Raise the subject</th>
<th>Alcohol Screening and Brief Intervention</th>
<th>BASICS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 2: Provide feedback</td>
<td>• Review client’s drinking patterns (e.g., DPW, heavy episodes)</td>
<td>• Normative comparison of student’s drinks per week to local and national data</td>
</tr>
<tr>
<td></td>
<td>• Comparison to NIAAA drinking guidelines*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Feedback on BAC</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Examine connections between alcohol use and other mental health problems (if applicable)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Feedback on consequences</td>
<td></td>
</tr>
<tr>
<td>Step 3: Enhance motivation</td>
<td>• Readiness ruler</td>
<td></td>
</tr>
<tr>
<td>Step 4: Negotiate and advise</td>
<td>• Assist participant to identify a goal</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Suggest strategies to help reduce harm</td>
<td></td>
</tr>
</tbody>
</table>

*Note. DPW = drinks per week, BAC = blood alcohol content *Men ≤ 14 drinks per week, women ≤ 7 drinks per week
Table 3. Comparison of Condition Components

<table>
<thead>
<tr>
<th>Condition Component</th>
<th>Intervention</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interventionist Contact</td>
<td>One individual</td>
<td>One individual</td>
</tr>
<tr>
<td>Baseline assessment</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Content</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Gender differences</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>• Drinking games</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>• A standard drink</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>• Celebrations</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>• BAC</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>• Signs of risky use</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>• Tips for moderate drinking</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Motivational Interviewing</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Moderate drinking guidelines*</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Personalized content (e.g., BAC card, normative comparisons, consequences)</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Normative comparisons</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Goal identification</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

*Men ≤ 14 drinks per week, women ≤ 7 drinks per week
Table 4. Demographic characteristics, Counseling Center and PSC

<table>
<thead>
<tr>
<th></th>
<th>Counseling Center, Total Intakes*</th>
<th>Psychological Services Center, Total Screened**</th>
<th>Total Completed</th>
<th>Intervention</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( n = 1243 )</td>
<td>( n = 65 )</td>
<td>( n = 35 )</td>
<td>( n = 15 )</td>
<td>( n = 20 )</td>
</tr>
<tr>
<td>Age, mean (SD)</td>
<td>22.1 (unknown)</td>
<td>21.9 (5.6)</td>
<td>21.1 (2.0)</td>
<td>21.2 (1.7)</td>
<td>21.0 (2.2)</td>
</tr>
<tr>
<td>Female, N (%)</td>
<td>850 (68%)</td>
<td>39 (60%)</td>
<td>19 (54%)</td>
<td>9 (60%)</td>
<td>10 (50%)</td>
</tr>
<tr>
<td>Male, N (%)</td>
<td>390 (31%)</td>
<td>36 (40%)</td>
<td>16 (46%)</td>
<td>6 (40%)</td>
<td>10 (50%)</td>
</tr>
<tr>
<td>Transgender, N (%)</td>
<td>3 (.2%)</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Year in school, N (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Freshman</td>
<td>212 (17%)</td>
<td>10 (15%)</td>
<td>3 (9%)</td>
<td>2 (13%)</td>
<td>1 (5%)</td>
</tr>
<tr>
<td>Sophomore</td>
<td>256 (21%)</td>
<td>18 (27%)</td>
<td>8 (23%)</td>
<td>2 (13%)</td>
<td>6 (30%)</td>
</tr>
<tr>
<td>Junior</td>
<td>238 (19%)</td>
<td>10 (15%)</td>
<td>6 (17%)</td>
<td>3 (20%)</td>
<td>3 (15%)</td>
</tr>
<tr>
<td>Senior</td>
<td>244 (20%)</td>
<td>16 (25%)</td>
<td>15 (43%)</td>
<td>7 (47%)</td>
<td>8 (40%)</td>
</tr>
<tr>
<td>Graduate student</td>
<td>269 (22%)</td>
<td>11 (17%)</td>
<td>3 (9%)</td>
<td>1 (7%)</td>
<td>2 (10%)</td>
</tr>
<tr>
<td>Race, N (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>807 (65%)</td>
<td>42 (65%)</td>
<td>26 (74%)</td>
<td>12 (80%)</td>
<td>14 (70%)</td>
</tr>
<tr>
<td>Asian / Pacific Islander</td>
<td>107 (9%)</td>
<td>8 (12%)</td>
<td>3 (9%)</td>
<td>1 (7%)</td>
<td>2 (10%)</td>
</tr>
<tr>
<td>African-American</td>
<td>119 (10%)</td>
<td>5 (8%)</td>
<td>1 (3%)</td>
<td>1 (7%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Native American / Alaskan</td>
<td>9 (.07%)</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>93 (7%)</td>
<td>10 (15%)</td>
<td>3 (9%)</td>
<td>1 (7%)</td>
<td>2 (10%)</td>
</tr>
<tr>
<td>Other</td>
<td>105 (8%)</td>
<td>0 (0%)</td>
<td>2 (6%)</td>
<td>0 (0%)</td>
<td>2 (10%)</td>
</tr>
<tr>
<td>Greek membership, N (%)</td>
<td>Unknown</td>
<td>Unknown</td>
<td>2 (6%)</td>
<td>0 (%)</td>
<td>2 (10%)</td>
</tr>
<tr>
<td>Athlete, N (%)</td>
<td>67 (5%)</td>
<td>Unknown</td>
<td>1 (3%)</td>
<td>1 (7%)</td>
<td>0 (0%)</td>
</tr>
</tbody>
</table>

*Data collected in “Total Intakes” column were collected from an electronic database and are subject to data-entry error. These data include all students who presented for treatment, including mandated, emergency, regular, and re-admittance intakes at the counseling center from March 2010-April 2011, not the total number of students screened. ** Includes regular and ADHD intakes.
Table 5. Drinking variables for completed sample, \( \text{Mean (SD)} \)

<table>
<thead>
<tr>
<th></th>
<th>( n = 35 )</th>
<th>( n = 15 )</th>
<th>( n = 20 )</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Average drinks per week</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline</td>
<td>18.61 (9.79)</td>
<td>20.26 (11.75)</td>
<td>17.38 (8.43)</td>
</tr>
<tr>
<td>1-month</td>
<td>13.93 (10.83)</td>
<td>10.83 (9.27)</td>
<td>16.25 (11.93)</td>
</tr>
<tr>
<td>2-month</td>
<td>14.27 (8.60)</td>
<td>11.83 (7.94)</td>
<td>16.36 (9.20)</td>
</tr>
<tr>
<td><strong>Frequency of drinking episodes per week</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline</td>
<td>3.54 (1.29)</td>
<td>3.66 (1.23)</td>
<td>3.45 (1.36)</td>
</tr>
<tr>
<td>1-month</td>
<td>3.25 (1.95)</td>
<td>3.42 (2.15)</td>
<td>3.13 (1.82)</td>
</tr>
<tr>
<td>2-month</td>
<td>3.19 (1.67)</td>
<td>3.00 (1.41)</td>
<td>3.36 (1.91)</td>
</tr>
<tr>
<td><strong>No. of heavy drinking days</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline</td>
<td>7.07 (4.52)</td>
<td>6.67 (5.04)</td>
<td>7.38 (4.21)</td>
</tr>
<tr>
<td>1-month</td>
<td>4.79 (4.23)</td>
<td>3.58 (3.23)</td>
<td>5.69 (4.74)</td>
</tr>
<tr>
<td>2-month</td>
<td>4.35 (3.82)</td>
<td>3.00 (3.19)</td>
<td>5.50 (4.03)</td>
</tr>
<tr>
<td><strong>Peak BAC</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline</td>
<td>.20 (.11)</td>
<td>.20 (.09)</td>
<td>.20 (.12)</td>
</tr>
<tr>
<td>1-month</td>
<td>.14 (.09)</td>
<td>.13 (.08)</td>
<td>.15 (.09)</td>
</tr>
<tr>
<td>2-month</td>
<td>.14 (.10)</td>
<td>.14 (.12)</td>
<td>.14 (.09)</td>
</tr>
<tr>
<td><strong>Alcohol-related consequences (range: 0-24)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline</td>
<td>8.80 (4.12)</td>
<td>10.40 (4.12)</td>
<td>7.60 (3.91)</td>
</tr>
<tr>
<td>1-month</td>
<td>4.69 (3.68)</td>
<td>4.08 (3.65)</td>
<td>5.13 (3.76)</td>
</tr>
<tr>
<td>2-month</td>
<td>4.46 (3.36)</td>
<td>3.75 (3.22)</td>
<td>5.07 (3.47)</td>
</tr>
<tr>
<td><strong>Protective behavioral strategies (range: 0-60)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline</td>
<td>41.31 (7.23)</td>
<td>38.53 (6.82)</td>
<td>43.40 (6.98)</td>
</tr>
<tr>
<td>1-month</td>
<td>47.00 (10.35)</td>
<td>45.56 (12.74)</td>
<td>48.00 (8.76)</td>
</tr>
<tr>
<td><strong>Perceived drinking norms (Drinks per week)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline</td>
<td>12.07 (5.56)</td>
<td>12.47 (6.41)</td>
<td>11.78 (4.98)</td>
</tr>
<tr>
<td>1-month</td>
<td>11.57 (5.69)</td>
<td>9.25 (5.02)</td>
<td>13.31 (5.68)</td>
</tr>
</tbody>
</table>

*Note.* No group differences by condition at baseline.
Table 6. Mental health characteristics of completed sample, $M (SD)$

<table>
<thead>
<tr>
<th></th>
<th>Total $n = 35$</th>
<th>Intervention $n = 15$</th>
<th>Control $n = 20$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using psych. meds at intake, $N (%)$</td>
<td>10 (29%)</td>
<td>3 (20%)</td>
<td>7 (35%)</td>
</tr>
<tr>
<td><strong>Primary mental health diagnosis, $N (%)$</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depressive disorder</td>
<td>12 (34%)</td>
<td>4 (27%)</td>
<td>8 (40%)</td>
</tr>
<tr>
<td>Anxiety disorder</td>
<td>10 (29%)</td>
<td>6 (40%)</td>
<td>4 (20%)</td>
</tr>
<tr>
<td>Eating</td>
<td>1 (.3%)</td>
<td>0 (0%)</td>
<td>1 (100%)</td>
</tr>
<tr>
<td>Adjustment</td>
<td>1 (.3%)</td>
<td>1 (100%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>ADHD</td>
<td>5 (35%)</td>
<td>2 (13%)</td>
<td>3 (15%)</td>
</tr>
<tr>
<td>Alcohol use disorder diagnosis, $N (%)$</td>
<td>13 (37%)</td>
<td>7 (47%)</td>
<td>6 (30%)</td>
</tr>
<tr>
<td>Other drug use diagnosis, $N (%)$</td>
<td>3 (9%)</td>
<td>1 (7%)</td>
<td>2 (10%)</td>
</tr>
<tr>
<td>Suicidal ideation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Past</td>
<td>8 (23%)</td>
<td>2 (13%)</td>
<td>6 (30%)</td>
</tr>
<tr>
<td>Present</td>
<td>2 (6%)</td>
<td>0 (0%)</td>
<td>2 (10%)</td>
</tr>
<tr>
<td>Beck Depression Inventory-II</td>
<td>15.97 (10.46)</td>
<td>16.80 (12.70)</td>
<td>15.35 (8.71)</td>
</tr>
<tr>
<td>Baseline</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-month</td>
<td>11.64 (7.74)</td>
<td>8.25 (6.33)</td>
<td>14.19 (7.90)</td>
</tr>
<tr>
<td>2-month</td>
<td>9.23 (7.12)</td>
<td>7.67 (5.00)</td>
<td>10.57 (8.49)</td>
</tr>
<tr>
<td>Perceived Stress Scale (4-item version)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline</td>
<td>8.26 (2.06)</td>
<td>8.73 (1.53)</td>
<td>7.90 (2.36)</td>
</tr>
<tr>
<td>1-month</td>
<td>6.95 (2.21)</td>
<td>7.00 (2.35)</td>
<td>6.92 (2.22)</td>
</tr>
<tr>
<td>2-month</td>
<td>6.85 (2.26)</td>
<td>6.67 (1.23)</td>
<td>7.00 (2.91)</td>
</tr>
</tbody>
</table>

*Note.* No group differences by condition on any variable at baseline. Mental health diagnosis percentages do not add up to 100% because of comorbidity and/or because of missing data.
<table>
<thead>
<tr>
<th>Reasons therapists did not offer program to eligibles</th>
<th>Total</th>
<th>CC</th>
<th>PSC</th>
</tr>
</thead>
<tbody>
<tr>
<td>The student did not bring up concerns about alcohol use</td>
<td>4 (25%)</td>
<td>2 (22%)</td>
<td>2 (29%)</td>
</tr>
<tr>
<td>I forgot</td>
<td>7 (44%)</td>
<td>4 (44%)</td>
<td>3 (43%)</td>
</tr>
<tr>
<td>I didn’t believe the program was effective</td>
<td>2 (13%)</td>
<td>2 (22%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>I didn’t know what to do</td>
<td>2 (13%)</td>
<td>0 (0%)</td>
<td>1 (14%)</td>
</tr>
<tr>
<td>I didn’t think alcohol use was a problem</td>
<td>2 (13%)</td>
<td>2 (22%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>I didn’t think student was receptive</td>
<td>3 (19%)</td>
<td>1 (11%)</td>
<td>2 (29%)</td>
</tr>
<tr>
<td>I don’t believe alcohol use is an important issue</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>The therapeutic alliance wasn’t strong enough</td>
<td>6 (38%)</td>
<td>5 (56%)</td>
<td>1 (14%)</td>
</tr>
<tr>
<td>Other mental health issues took priority</td>
<td>7 (44%)</td>
<td>7 (78%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>I ran out of time</td>
<td>6 (38%)</td>
<td>4 (44%)</td>
<td>2 (29%)</td>
</tr>
<tr>
<td>I prefer the OPTIONS program</td>
<td>1 (6%)</td>
<td>1 (11%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>I didn’t not want the student to receive the control</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>I do not like research</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Reasons therapists offered the program to eligibles</th>
<th>Total</th>
<th>CC</th>
<th>PSC</th>
</tr>
</thead>
<tbody>
<tr>
<td>The student brought up concerns about his/her alcohol use*</td>
<td>13 (81%)</td>
<td>9 (100%)</td>
<td>4 (57%)</td>
</tr>
<tr>
<td>My supervisor told me I had to offer it</td>
<td>6 (38%)</td>
<td>2 (22%)</td>
<td>4 (57%)</td>
</tr>
<tr>
<td>I believed the intervention would be effective</td>
<td>13 (81%)</td>
<td>9 (100%)</td>
<td>4 (57%)</td>
</tr>
<tr>
<td>Offering the program fit naturally into our conversation</td>
<td>7 (44%)</td>
<td>4 (44%)</td>
<td>3 (43%)</td>
</tr>
<tr>
<td>I felt comfortable offering it and knew what to say</td>
<td>11 (69%)</td>
<td>7 (78%)</td>
<td>4 (57%)</td>
</tr>
<tr>
<td>I believed alcohol use was a problem*</td>
<td>14 (88%)</td>
<td>9 (100%)</td>
<td>5 (71%)</td>
</tr>
<tr>
<td>The student was willing to receive additional services</td>
<td>10 (63%)</td>
<td>6 (67%)</td>
<td>4 (57%)</td>
</tr>
<tr>
<td>I wanted to help out the provider</td>
<td>14 (88%)</td>
<td>7 (78%)</td>
<td>7 (100%)</td>
</tr>
<tr>
<td>Statement</td>
<td>Count</td>
<td>Percentage</td>
<td></td>
</tr>
<tr>
<td>--------------------------------------------------------------------------</td>
<td>-------</td>
<td>------------</td>
<td></td>
</tr>
<tr>
<td>I believe alcohol misuse is important to address</td>
<td>13 (81%)</td>
<td>9 (100%)</td>
<td>4 (57%)</td>
</tr>
<tr>
<td>I believed the therapeutic alliance was strong enough</td>
<td>8 (50%)</td>
<td>4 (44%)</td>
<td>4 (57%)</td>
</tr>
<tr>
<td>I value integration of empirically supported treatment</td>
<td>15 (94%)</td>
<td>9 (100%)</td>
<td>6 (86%)</td>
</tr>
</tbody>
</table>

* Indicates a response option that therapists identified as “most important” in their decision to offer or not offer the program. Participants were permitted to select more than one response option, and numbers do not sum to 100%.
<table>
<thead>
<tr>
<th>Reasons therapists believed eligibles said “yes”</th>
<th>Total ( N = 16 )</th>
<th>CC ( n = 9 )</th>
<th>PSC ( n = 7 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>They wanted help with their alcohol use*</td>
<td>13 (81%)</td>
<td>9 (100%)</td>
<td>4 (57%)</td>
</tr>
<tr>
<td>The timing was right</td>
<td>10 (63%)</td>
<td>9 (100%)</td>
<td>1 (14%)</td>
</tr>
<tr>
<td>They thought they had to</td>
<td>1 (6%)</td>
<td>1 (11%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>They wanted any services our center would offer</td>
<td>5 (31%)</td>
<td>4 (44%)</td>
<td>1 (14%)</td>
</tr>
<tr>
<td>They were trying to placate me</td>
<td>5 (31%)</td>
<td>3 (33%)</td>
<td>2 (29%)</td>
</tr>
<tr>
<td>They wanted to participate in research</td>
<td>2 (13%)</td>
<td>0 (0%)</td>
<td>2 (29%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Reasons therapists believed eligibles said “no”</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>They did not think alcohol was a problem*</td>
<td>14 (88%)</td>
<td>9 (100%)</td>
<td>6 (86%)</td>
</tr>
<tr>
<td>The therapeutic alliance was not strong enough</td>
<td>8 (50%)</td>
<td>7 (78%)</td>
<td>1 (14%)</td>
</tr>
<tr>
<td>They assumed I was accusing them of having an alcohol problem</td>
<td>5 (31%)</td>
<td>3 (33%)</td>
<td>2 (29%)</td>
</tr>
<tr>
<td>They had significant personality/interpersonal issues that promoted defensive behavior and/or refusal</td>
<td>6 (38%)</td>
<td>6 (67%)</td>
<td>1 (14%)</td>
</tr>
<tr>
<td>They said no because they could</td>
<td>8 (50%)</td>
<td>5 (56%)</td>
<td>3 (43%)</td>
</tr>
<tr>
<td>They did not want to participate in research</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td></td>
</tr>
<tr>
<td>They felt the offer minimized presenting concerns</td>
<td>2 (13%)</td>
<td>1 (11%)</td>
<td>1 (14%)</td>
</tr>
<tr>
<td>The student feared sensitive information would be shared with program provider</td>
<td>1 (6%)</td>
<td>0 (0%)</td>
<td>1 (14%)</td>
</tr>
<tr>
<td>Response</td>
<td>Percentage</td>
<td>Therapists' Response</td>
<td></td>
</tr>
<tr>
<td>----------------------------------------------------</td>
<td>------------</td>
<td>----------------------</td>
<td></td>
</tr>
<tr>
<td>Student felt it would not be useful</td>
<td>13 (81%)</td>
<td>9 (100%)</td>
<td></td>
</tr>
<tr>
<td>The student was too distressed to make an informed decision</td>
<td>5 (31%)</td>
<td>5 (56%)</td>
<td>1 (14%)</td>
</tr>
</tbody>
</table>

* Indicates the response option that therapists believed was “most important” in student’s decision to participate or not in the study. Participants were permitted to select more than one response option, and numbers do not sum to 100%.
References


*Addictive Behaviors, 32*, 2469-2494.


DeMartini, K. S. (2011). *Optimizing the use of the AUDIT in alcohol screening for college students (Unpublished doctoral dissertation).* Syracuse University, Syracuse, NY.


NIAAA, T. F. o. t. (2002). *A call to action: Changing the culture of drinking at U.S colleges*.


Collaborative Project on Early Detection of Persons with Harmful Alcohol Consumption--II. *Addiction*, 88(6), 791-804.


Substance Abuse & Mental Health Services Administration. (2009a). *Results from the 2008 National Survey on Drug Use and Health: National findings*.


*Alcohol Research and Health, 27*, 186-196.


DANIELLE L. TERRY

Curriculum Vitae

DATE OF BIRTH

November 28, 1984

PLACE OF BIRTH

Utica, New York

EDUCATION

2009-Present  Syracuse University, Ph.D. in progress

Dissertation Title: Screening and Brief Intervention for Hazardous Alcohol Use: Application in a College Counseling Center

Dissertation Advisor: Kate B. Carey, Ph.D.

2006-2008  Syracuse University, M.S. in Clinical Psychology

Thesis Title: The Impact of Stress and Performance Feedback on Smoking-Related and Affective Variables in College Students

Thesis Advisor: Monica S. Webb, Ph.D.

2003-2005  SUNY Institute of Technology, B.A. in Psychology

Thesis Title: Use of Peripheral Cues in Determining Attractiveness

Thesis Advisor: Paul Schulman, Ph.D.

2002-2003  Mohawk Valley Community College, A.A.

PUBLICATIONS


