EVALUATING THE METHODOLOGY IN COLLEGE ALCOHOL RESEARCH

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EVALUATING THE METHODOLOGY

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CHAPTER I

INTRODUCTION

Trends over the last several decades continue to demonstrate the significance of heavy alcohol consumption as a problem for college students throughout the United States (O'Malley & Johnston, 2002). So widespread are the consequences associated with this alcohol use (Hingson, Heeren, Zakocs, Kopstein, & Wechsler, 2002), that researchers in the field have been "called to action" by the U.S. Surgeon General to address what has been labeled a "serious public health concern" (U.S. Department of Health and Human Services [USDHHS], 2000). Answering this call was a special task force commissioned by the National Institute of Alcohol Abuse and Alcoholism (NIAAA) in 1998. Among their many findings, the task force reported that recognition of the magnitude of this problem must serve as an impetus for enhancing methods of research, assessment, and intervention (National Institute of Alcohol Abuse and Alcoholism [NIAAA], 2007).

At the forefront of matters in alcohol research is that despite decades of studying the problem, there remains no "gold-standard" (Maisto & Conners, 1992) for measurement. Perhaps one of the most widely debated issues concerning this measurement has been the central role held by the self-report in most alcohol assessments. While self-report methods of data collection certainly are not unique to alcohol studies, some concern exists as to whether substance users can be expected to accurately and reliably report on their substance use (Babor, Stephens, & Marlatt, 1987). In fact, several variables have been identified that appear to influence how self-reports

are made, including: social context factors, respondent characteristics, task attributes, and motivational and cognitive processes (Babor, Brown, & Del Boca, 1990; Del Boca & Darkes, 2003). Despite these concerns and the wide variability found within self-reports their veracity has been well-established and accepted in the literature as adequate measures for research purposes (Babor, Steinberg, Del Boca, & Anton, 2000; Babor, Stevens, & Marlatt, 1987; Del Boca & Darkes; Sobell & Sobell, 1990), in part, through the use of collateral informants.

A collateral informant is any individual close to the research participant who can provide knowledge as to the participant's drinking patterns and behaviors. Because collaterals can potentially provide information for any context and timeframe for which they have knowledge; and because collecting that information is relatively inexpensive and unobtrusive compared to other methods of corroboration (i.e. breath, blood, or urine anlysis or biochemical markers; Allen, Litten, & Anton, 1992), collaterals have come to represent a flexible and widely employed method of data validation in alcohol and substance use research, though their use has also not been without considerable debate. Traditionally, the collateral report has been viewed as a benchmark against which the self-report could be compared (Maisto & Conners, 1992). Such comparisons have yielded moderate to high levels of agreement overall, and when discrepancies have existed researchers have generally favored the self-report as the more reliable of the two measures (Del Boca & Darkes, 2003). Taken together, some have questioned whether collateral reports continue to contribute significantly to alcohol research in any appreciable way that justifies their continued use.

However, these questions may be premature in that they have been based thus far primarily on studies where collaterals were used and participants were aware of their involvement. That is, a vast majority of studies reporting findings involving collaterals did not vary collateral use independently, but rather analyzed it secondary to other research questions, thereby limiting the causal inferences that can be made. Connors and Maisto (2003) have suggested that this methodology raises the possibility that the high degree of correspondence between self- and collateral-reports may be at least partly a reflection of collaterals being contacted. Consistent with bogus-pipeline effects (Jones & Sigall, 1971), this may suggest that self-reports may be influenced by the belief that the report will be verified through other means. However, more recent studies that have compared collateral with no-collateral groups have yielded mixed findings. Cunningham, Wild, and Cordingley (2004) found that self-reported levels of alcohol consumption were higher for participants who provided collaterals than for those who did not. LaForge, Borsari, and Baer (2005), however, were unable to find differences between collateral and no-collateral groups during long-term follow-up assessments.

These mixed results suggest that further research is still needed before a more definitive position can be taken concerning the ongoing use and utility of collaterals in alcohol research. Specifically, further investigation is needed to address the question of whether or not the presence or absence of a collateral informant has any impact on how the self-report is made, and if so, what type of impact it may have. This study has been designed with this question in mind. In order to investigate this question, 18-24 year-old college students were invited to participate in research that assessed their drinking patterns over a brief one-week interval. Upon entering the study, participants were

randomly assigned to either a collateral or no-collateral condition, such that the use of a collateral was systematically varied and controlled-for, enabling stronger inferences to be made from the observations made when comparing these groups.

Even with this added control, the issue still remained concerning the use of self- and collateral-reports as validating measures for one another. That is, does convergent validity between these two measures provide an appropriate standard of measurement? In order to address this question, an independent third measure is needed against which the others can be compared. Transdermal alcohol monitoring may prove to be an appropriate next step in alcohol research measurement. Unlike the other physiological alternatives previously identified (blood, breath, urine, biochemical measures, etc), transdermal measurement devices are compact and portable, and allow for the continuous measurement of alcohol consumption in an *in vivo* context, thereby providing the flexibility needed to address this methodological issue. Taking advantage of this new technology, the current study employed the use of Secure Continuous Remote Alcohol Monitors (SCRAM's), which took the form of ankle bracelets that were continuously worn by participants throughout the study.

Because it is possible that use of the SCRAM may have also had an impact on participants' self-reports, it was also established as an independent variable with participants being randomly assigned to either a SCRAM or no-SCRAM condition upon entering the study. This variable was fully-crossed with collateral use, such that four experimental conditions were present in the study: self-report only; self-report and collateral-report; self-report and SCRAM; and self-report, collateral-report, and SCRAM. This design allowed for the interpretation of any main effects stemming from the use of a

collateral informant or a SCRAM, as well as any interaction effects that may be observed between the two.

In summary, the current study sought to further elucidate and enhance some of the methodological issues in measuring alcohol consumption among college populations. In doing so, two primary questions were addressed: what impact does the use of collateral reports have on self-reports (if any); and can the use of collateral reports as an appropriate comparative measure for self-reports be supported by transdermal alcohol monitoring? Addressing these questions is consistent with the current objectives established by the NIAAA, and other researchers in the field. Sobell and Sobell have reported that: “Relevant research questions now must address a different set of issues, such as which subjects, under what conditions give accurate responses, and what types of procedures can be developed to enhance the accuracy of self-reports” (1990, p. 87). It is hoped that this study will significantly contribute to this very important endeavor, not only in seeking to provide answers to the questions set forth in the study, but also in seeking to raise new questions that will stimulate further investigation in these important research areas.

CHAPTER II

REVIEW OF LITERATURE

Research in alcohol and substance abuse has faced a number of challenges throughout its history. Perhaps the greatest among these is that the field lacks a "gold-standard" for measurement (Maisto & Connors, 1992). While a number of advances in science and technology have provided the field with improved methods of assessment, a vast majority of the available research continues to rely heavily on the self-report of the substance user, the validity of which has been the subject much debate. The debate itself is problematic however, as illustrated by Midanik (1988): "much of the literature appears to be inappropriately seeking the definitive answer to a relative question, e.g. are self reports of alcohol use valid?" (p. 1019). Like much of the current research concerning the issue of self-report validity, she concluded that a more appropriate focus of research should be identifying a variety of techniques and strategies that will yield more accurate responding from specific populations of interest. Consistent with these objectives, the purpose of this study is to explore the impact of specific assessment methods on the accuracy of self-reported alcohol use among heavy-drinking college students.

Alcohol consumption among college students

Heavy and frequent alcohol consumption by college students is a widespread and well documented problem among colleges and universities in the United States. Traditional age (18-24) college students consistently consume more alcohol than their non-college peers of the same age (O'Malley & Johnston, 2002). While non-students are

more likely to consume alcohol regularly, the data suggest that students consume larger quantities per drinking occasion, often exceeding the maximum quantity that is considered safe for a single occasion (Chen, Dufour, & Yi, 2004). Furthermore, because many college students are unaware of the types and quantities of alcohol comprising a single standard drink, they tend to over-pour and under-report the actual amount of alcohol consumed, suggesting that the extent of alcohol consumption among college students may be even greater than documented in the research literature (The National Council on Addiction and Substance Abuse [CASA], 2007).

The consequences of this excessive drinking are also widespread and problematic, as documented by a 2002 epidemiological study conducted by Hingson and colleagues. Their findings suggest that among 18-24 year old college students, alcohol accounts for an estimated 1,400 deaths and 500,000 unintentional injuries per year. An additional 600,000 students report being assaulted by another student who had been drinking; 70,000 students report being the victim in an alcohol-related sexual assault; and more than 400,000 students engage in unsafe sexual practices following alcohol consumption yearly. More than 105,000 students develop health problems related to alcohol each year, and 110,000 students are arrested for violations related to alcohol use annually (Hingson et al., 2002).

Numerous national and large scale studies have been conducted to examine alcohol consumption among college students. These studies include: The College Alcohol Study (CAS) by The Harvard School of Public Health (Wechsler, Lee, Kuo, & Lee, 2000), The Core Institute (Core) at Southern Illinois University (Presley, Meilman, & Cashin, 1996), Monitoring the Future (MTF) by The University of Michigan

(Johnston, O'Malley, & Bachman, 2000), The National Household Survey on Drug Abuse (NHSDA) by the Substance Abuse and Mental Health Services Administration (Substance Abuse and Mental Health Services Administration [SAMHSA], 1999), and others. These studies have consistently found that approximately 70% of college students reported drinking during the last 30 days; and approximately 40% reported heavy episodic drinking during the last two weeks (O'Malley & Johnston, 2002). This heavy episodic drinking, or binge drinking, has recently been redefined by the National Institute on Alcohol Abuse and Alcoholism's (NIAAA) National Advisory council as "a pattern of drinking alcohol that brings blood alcohol concentration (BAC) to 0.08 gram-percent or above" (National Institute on Alcohol Abuse and Alcoholism [NIAAA], 2007, p. 2). This pattern roughly correspond to the consumption of five or more standard alcoholic beverages for adult males and four or more for adult females within a two-hour time-frame.

While recent trends show progress with an increase in the number of students abstaining from alcohol, the number of frequent binge drinkers has also increased (Wechsler et al., 2000). This trend has resulted in the Surgeon General along with the U.S. Department of Health and Human Services specifically targeting binge drinking as a serious public health concern, commissioning in 2007 The Surgeon General's Call to Action to Prevent and Reduce Underage Drinking (U.S. Department of Health and Human Services [USDHHS], 2007), and calling for a drastic reduction in binge-drinking behaviors by the year 2010 (USDHHS, 2000). The same report addressed the inappropriate levels of social acceptance of this behavior stating:

> The perception that alcohol use is socially acceptable correlates with the fact that more than 80 percent of American youth consume alcohol before their 21st birthday, whereas the lack of social acceptance of other drugs correlates with comparatively lower rates of use. Similarly, widespread societal expectations that young persons will engage in binge drinking may encourage this highly dangerous form of alcohol consumption (USDHHS, 2000, p. 946).

While neither college drinking nor its consequences are a new phenomenon, continued findings of increasing heavy drinking have raised much concern over the problem. In response to this and other complex issues regarding alcohol abuse among college students, a Task Force on College Drinking was commissioned in 1998 by the National Advisory Council on Alcohol Abuse and Alcoholism to explore and disseminate information regarding the past, present, and future directions for issues related to college drinking in the U.S. Among the Task Force's numerous recommendations was "the [recognized] need for both new and expanded research activities" that includes "improved methods for understanding the dimensions of the alcohol problem on campus" (NIAAA, 2002, p. 29). Ralph Hingson, a member of the Task Force, further elucidated this position stating: "The magnitude of problems posed by excessive drinking among college students should stimulate both improved measurement of these problems and efforts to reduce them" (NIAAA, 2007, p. 3). Before this can be accomplished, however, past and present barriers to effective alcohol research must first be understood.

Self-reports in substance abuse research

Among the many problems encountered in alcohol and substance abuse research is the fact that there remains no "gold-standard" for measurement (Maisto & Connors,

1992). Instead, most research has relied heavily on self-report data provided by the substance user. This is due in no small part to the fact that the types of information that are necessary for understanding these problems are those which lend themselves to behaviors and contexts that only the substance user can provide (Babor et al., 1990). Such contexts include: personal and family histories; specific behaviors leading up to and following the consumption of alcohol; internal and external factors associated with drinking occasions; type, amount, and frequency of alcohol consumption; consequences of drinking; personal attitudes about drinking; and others (Sobell & Sobell, 1990). Furthermore, diagnosis of substance use related disorders often requires information that only the user can provide, given that the at least some of the current diagnostic criteria include cognitive components that rely on the user's recollection of past and present behaviors as well as their intentions and desires concerning their substance use (American Psychiatric Association, Diagnostic and statistical manual of mental disorders, 4th ed, text revision, 2000 [*DSM-IV-TR*]). Thus, it is both out of necessity and convenience that the self-report has become the primary source of data in alcohol and substance abuse research.

While this need for self-reported information has been well-established, many in the field have questioned the use of a methodology that relies so heavily on data that by its very nature is prone to errors of reliability and validity. Here, the question is raised as to whether a substance-user can reliably provide an accurate and unbiased assessment as to her/his own behavior (Babor et al., 1987). A number of issues may be raised in considering this question including: the ability to accurately recall necessary details; the purpose and setting of the assessment (legal, clinical, research, etc); and perceived

benefits or consequences to biased or unbiased responding. Del Boca and Darkes (2003) have broadly classified variables influencing self-reports into three categories: social context factors, respondent characteristics, and task attributes.

Social context factors generally refer to the dynamics of the assessment setting, cultural norms, and interpersonal characteristics among all those involved in the assessment process. These dynamics are believed to influence responding by establishing role expectations and characterizing the social desirability of the behavior in question. Respondent characteristics encompass a much broader class of variables and include all the personal factors that may influence the responses made by the individual (personality, attitudes and beliefs, cultural identity, physical and mental health, etc).

Cognitive abilities, in particular, comprise a significant aspect of respondent characteristics that can influence the individual's ability to provide accurate information. Because a number of aspects are involved in information processing (storage and retrieval, primacy and recency, saliency and specificity, and frequency effects to name a few), memory recall tends to rely on behavioral estimations that are susceptible to biases. The accuracy of these estimations may be further constrained in alcohol and substance abuse research, given the impairing properties these substances are known to have on cognitive abilities.

While the first two categories reflect characteristics of the people involved in the assessment, characteristics of the assessment itself can also influence responding. These task attributes refer to the method by which information is collected and the implications as to how it may be used. Complexity of the task, degree of confidentiality, and probability of obtaining independent verification are all examples of the types of task

variables that increase the likelihood of biases being present in self-reported information. Taken together, all of these social, personal, and task characteristics interact to affect response behavior. However additional research is necessary to fully understand to what extent these effects may be reflected in the accuracy of self-reports (Del Boca & Darkes, 2003).

Collateral informants in substance abuse research

Given the stated concerns about the veracity of self-reports as the standard for measurement, researchers have sought out additional methods of data collection to validate and augment self-reports. While numerous methodologies have been employed, the most commonly documented has involved the use of collateral informants. Maisto and Connors (1992) provided a thorough review of the status of self and collateral reports in alcohol research. They defined the collateral informant as any individual with an adequate basis for describing and reporting on the primary subject's drinking behaviors. While loosely defined, this conceptualization of collaterals has enabled them to be used in a variety of ways in addressing research questions. It is likely this flexibility that has led to their widespread use as a second measure in alcohol and substance research. Unlike other measures which generally yield very narrowly defined data (biochemical measures, legal or medical records, etc), collaterals possess the potential ability to report broader contexts that may include any details over any timeframe for which the collateral has knowledge. Among their other benefits are their ease of use and the fact that they provide a non-invasive and relatively inexpensive method for collecting additional information (Maisto & Connors, 1992).

Initially, because self-reports tended to be viewed as suspect, collateral reports were utilized as a standard by which the accuracy of the self-report could be judged. By comparing the two reports, they could be statistically analyzed in terms of the percentage to which the reports agree, the mean difference between the reports, and the amount and direction of discrepancies on specific variables being measured. When agreement between the reports was found to be high, the self-reports were assumed to be valid. "Consistency between two independent but imperfect measures of an event lend confidence in the accuracy of the information obtained" (Connors & Maisto, 2003, p. 22). Using collaterals in this way, researchers have consistently found moderate to high levels of subject-collateral agreement, and have concluded the self-report to have adequate reliability and validity for research purposes (Del Boca & Darkes, 2003).

Given the robust nature of these findings, a number of additional questions are raised regarding the continued use of self and collateral reports in alcohol research. This is not surprising, however, given that the assumption of validity as previously described is based primarily on the use of one imperfect measure to confirm a second equally imperfect measure. Underlying this is the supposition that it would be unlikely for the two reports to be systematically biased in the same direction. When considering this argument, however, one must also consider the factors such as those described earlier (Del Boca & Darkes, 2003) that contribute to biases when they do exist. Given that the collateral is typically personally selected by the subject, and that s/he is selected specifically because of her/his close relationship and firsthand knowledge related to the subject's drinking behaviors; one cannot dismiss the possibility that if a bias exists with the subject (either consciously or unconsciously) to appear more or less favorable, that

this bias may also be shared by the collateral in how s/he describes the subject. This phenomena, described by Maisto and Connors (1992) as “spousal courtesy” (to describe a spouse or any “close person” who may serve as a collateral) is one of many potential sources of error that may contribute to either the over-reporting or under-reporting of alcohol consumption and related problems.

A second observation stemming from the research literature is that when discrepancies have existed between self and collateral reports, it has been more common that the self-report presented the subject more negatively than collaterals or other corroborative records (O’Farrell & Maisto, 1987). These findings highlight the “more is better” assumption, implicit in much alcohol research (Leigh, 2000). Stemming from these observations, some have argued that because it would be unlikely for an individual to over-report personal alcohol consumption, and because there is no reason to believe the collateral’s report (secondhand information) to be more accurate than the subject’s report (firsthand information), the self-report has been assumed to be the more valid of the measures.

Some research, however, has shown that subjects have presented themselves more negatively than they actually were. Aiken (1986) found that individuals’ retrospective reports were systematically more negative than their original reports, suggesting that the subjects distorted their initial presentation for purposes of impression management or to access needed services. Furthermore, social-context factors also have been shown to play a significant role in self-reports (Del Boca & Darkes, 2003). With respect to college student populations, perceived social norms and self-other comparisons have been identified as significant factors contributing to the acceptance of excessive alcohol

consumption as normal behavior (Borsari & Carey, 2001). Thus, in some populations (such as college students), the perception exists that it is actually more socially desirable to present oneself as a heavier alcohol consumer.

History of self and collateral reports in alcohol research

Mixed findings over the last several decades make it unclear as to the extent to which the self-report can be assumed a valid measure, and the extent to which collateral reports support or challenge this validity. Babor, Stephens, and Marlatt (1987) report that the literature supports acceptable levels of reliability and validity, but that each of these measures has been met with considerable variability that depends on a number of factors. Specifically, the type and sensitivity of the measure; the relative timeframe reflected in the information collected; the specificity of the secondary validation criteria; personal characteristics of the individuals involved; and demand characteristics of the task are all methodological considerations that contribute to the variability in self-report measures. Based on these considerations, they concluded that self-reports are "inherently neither valid nor invalid" (Babor etal., 1987, p. 417). Consistent with this argument, Connors and Maisto (2003) assert that both self and collateral reports are "best viewed as perspectives on behavior that are evaluated in relation to each other as part of a broader evaluation" (p. 28).

Concomitant with this shift in ideology, a review of the literature demonstrates that the roles of self-reports have changed throughout their history in alcohol research. Until the 1970's, researchers maintained an antithetic position, wherein the self-report existed as the standard of measurement in alcohol research and was accepted unequivocally, despite the commonly held belief that this report could not be trusted

(Sobell & Sobell, 1990). Since that time, alcohol research methodology has expanded to incorporate improved methods of assessment, including but not limited to the collection of corroborative information such as that provided by collateral informants. This research proved beneficial to the field in that, the data largely support the validity of self-reports as appropriate and acceptable measures of behavior (Babor et al., 2000). Among the limitations within this research, however, was the fact that very few controlled studies systematically explored collateral informants as a primary focus of the study. Instead, much of the early data collected analyzed collaterals secondary to other research questions (Maisto & Connors, 1992).

More recently, research on self-reports has shifted to exploring what conditions specifically lend themselves to enhancing the validity of self-reports (Sobell & Sobell, 1990). This line of research has identified several important characteristics that appear to impact the level of agreement between self and corroborative reports. Babor, Brown, and Del Boca found that subjects' self- reports were most directly influenced by personal characteristics, task characteristics, motivation, and cognitive processes (1990). More specifically, they noted that "any verbal report (be it an oral or written response or a keystroke at a computer terminal) is most immediately the result of an interplay of motivational and cognitive factors" (p. 13). Thus, the accuracy of a response is directly affected both by information processing factors (such as attention and memory), and the respondent's desire to have their behavior viewed as either more or less favorable depending upon the perceived benefits or consequences of the assessment.

Other factors also appear to play a role in the level of agreement observed between self and collateral reports. For example, responses that require recall of objective

rather than subjective events, the collateral's level of confidence in her/his report, frequency of contact (number of occasions to observe alcohol consumption) between subject and collateral, and nature of their relationship all appear to moderate self-collateral agreement (Laforge et al., 2005; Sobell, Agrawal, & Sobell, 1997). Not all close relationships have been found to be equal, however. Whereas spousal reports have been shown to demonstrate high levels of agreement (Sobell et al., 1997), parents and children tend to drastically underestimate heavy drinking for one another (Engels, Van Der Vorst, Dekovic, & Meeus, 2007), and college study partners have been shown to produce greater agreement than college roommates (Laforge et al., 2005).

The Bogus Pipeline Effect

With the veracity of the verbal self-report well established in the literature and procedures identified to further enhance its validity, investigators have recently questioned whether the benefits of collateral informants significantly contribute to ongoing clinical research. However, this assertion is met with considerable limitations in that it has been based only on studies where collateral informants were used and subjects were aware of their involvement. Connors and Maisto have raised the possibility that the high degree of correspondence may be at least partly a function of the collaterals being contacted (2003). This phenomena, sometimes referred to as the "bogus pipeline" suggests that the subject's knowledge that her/his report may be verified through some other pipeline of information (collateral or other corroborative report) may result in a more careful self-report being made (Jones & Sigall, 1971).

Two recent longitudinal studies have explored the impact of providing collaterals on self-reported drinking. In 2004, Cunningham, Wild, and Cordingley found that

subjects who provided collaterals showed lower rates of attrition and reported higher levels of consumption and associated consequences at a six month follow-up. While not definitive, the researchers have suggested that one possible explanation for the findings is that the subject's knowledge that their responses would be confirmed may have resulted in a tendency to "err on the side of caution" and "provide an upper-limit description of their drinking (p. 619)."

In contrast, LaForge, Borsari, and Baer (2005) found no evidence that self-reports were influenced by prior knowledge of possible collateral involvement. In this study, all subjects were informed at baseline of the possibility of collaterals being contacted at some point during the study. Follow-up assessments were then conducted at 12, 18, and 24 months, with collaterals (when used) only being contacted following the 12-month assessment. While no systematic differences were observed between those reports that were verified by collaterals and those that were not, the researchers did note some limitations in making inferences from this data. First, it is possible that the lack of an effect may have been confounded by the fact that all participants were informed at baseline of the possibility of collateral involvement. Second, the timeframe of the study and the length of the intervals between assessments may have been too long for the expected impact of collateral involvement to prove salient to subjects when providing later reports.

Alternative Methods to Alcohol Assessment

Innovations in science and technology have provided a number of alternative methods for assessing alcohol use. Biochemical markers, in particular, have been the focus of much research. An early review of these provided by Allen, Litten, and Anton

(1992), however, suggests that they too are not without significant concerns. More specifically, the sensitivity and specificity of these markers need to be better understood and in some cases enhanced before their use in non-laboratory settings would be appropriate. When drawing a comparison between these measures and self-report measures, both have strengths and limitations that should be considered. Biochemical markers appear to be better at detecting alcohol at high levels of intake, though measurement by biochemical methods is limited by dichotomous results (presence or absence of alcohol) in contrast to measures of continuous assessment that allow for a more thorough collection of information (frequency and quantity of consumption, for example). Verbal measures (self, collateral, and computerized reports, as well as time-line follow-back procedures), on the other hand, tend to be easier to use, less expensive, less intrusive, and more flexible (Allen et al., 1992). Based on these findings, and because setting is an important factor in any alcohol assessment, self-report measures appear at present to be more appropriate for assessing alcohol use in a college setting, than biochemical measures.

Breath, blood, and urine testing are commonly used alternatives for approximating blood-alcohol concentrations. However, these measures also are limited, primarily in that there are significant constraints on the window of time within which they can detect the presence of alcohol. Belkin and Miller (1992) reported that blood screenings will test positive only after very recent use (defined as within 7 hours), and Midanik (1988), reported that breath screenings can only be validated within 24 hours (at best). In addition, breath, blood, and urine testing are highly intrusive methods, making them impractical for studying *in vivo* alcohol use among free-roaming participants.

These limitations suggest the need for a more continuous, but still unobtrusive method for alcohol detection. Transdermal alcohol monitoring, while still early in its development, may prove useful in meeting these needs. In its current stages, transdermal alcohol monitoring utilizes a portable, wearable device (such as a wrist or ankle bracelet) that measures ethanol concentrations contained in insensible skin perspiration (Swift and Swette, 1992). Several recent studies have found this method of assessing alcohol concentrations to be both promising, and highly correlated with other methods of measurement (Hawthorne & Wojcik, 2004; Leffingwell, 2007; Sakai, Mikulich-Gilbertson, Long, & Crowley, 2006; Swift, 2000).

Present Study

The lack of a gold-standard in alcohol research has led to the development of a variety of strategies aimed at improving the reliability and validity of data obtained in assessing alcohol consumption. Physiological measures show promise as a means of validating verbal reports and other methods of assessment, but the complexities, costs, and other limitations associated with these measures may make many of them unsuitable for certain types of populations and settings, including college campuses. Given these constraints, continued research is needed to explore the methods and conditions that may serve to further enhance the veracity of data obtained from appropriate and currently available assessment modalities.

Self and collateral reports continue to hold a central role in assessing alcohol consumption. While the research literature has provided mixed results on the acceptability of both, few studies have employed control conditions to systematically examine exactly what role and impact collateral reports may have. Additional relatively

new but mixed findings also demonstrate the need for further research into possible bogus pipeline effects in alcohol research. The limitations of previous studies suggest that continued research should consider the assignment of participants to both collateral and non-collateral conditions to assess the possible impact that may be observed by the presence or absence of collateral reporters; and should consider alternate time-frames to address the issue of saliency for the participants (LaForge et al., 2005). Finally, the availability of new portable, continuous alcohol monitoring devices may prove useful as an appropriate physiological measure against which the veracity of verbal-reports can be supported (or refuted).

The extent of alcohol-related problems identified among college students, and the identified need for improved research methods in understanding these problems, delineates this specific group as a population of continued interest in these developing areas of research. The goal of the current study is to explore the impact of collateral informants on self-reports in conducting brief alcohol assessments in a heavy-drinking college student sample, utilizing transdermal alcohol monitoring technology as an independent secondary measure of alcohol consumption. Specifically it is hypothesized that: self-report measures will indicate higher levels of alcohol consumption and will correlate more highly with transdermal measures when collateral reports are obtained.

CHAPTER III

METHODOLOGY

Participants

Participants were recruited primarily through the research participation pool of a major four-year university in the Southwestern United States, as well as through advertisements hung on campus bulletin boards. As a part of their registration process in using this system, students completed a pre-screening questionnaire that included items used to assess their suitability as a participant in this study. Based on their responses to these initial items, potential participants were contacted by email providing them with information about the study and inviting them to contact the researchers to determine their eligibility. At the time that recruiting was conducted for this study, 1280 students were registered with the research participation system. Of these, 320 reported having consumed alcohol during the past twelve months and were contacted as potential participants (Appendix H). Two hundred fifteen students responded to the initial invitation of which 170 were contacted for further screening (Appendix I). The remaining 45 students were either unreachable by phone or failed to respond to phone messages. Figure 1 provides a full diagram of participant recruitment data.

To meet inclusion criteria for the study, participants had to be currently enrolled at least part-time in college courses, be between 18-24 years of age, and meet screening criteria as a high-risk alcohol consumer. For this study, screening criteria consisted of minimum self-reported levels of alcohol consumption during the previous month that

included a total of twenty or more alcohol beverages and at least one heavy drinking episode (identified as four or more standard alcohol beverages consumed during a single two-hour period). In addition to the minimum alcohol consumption requirements, participants also had to be able and willing to provide a collateral informant (being any close friend or relative who was familiar with the participant's behaviors regarding alcohol consumption, who was at least 18 years of age, and who was also willing to participate in the study), and be able and willing to wear a small electronic monitoring device around her/his ankle for a period not to exceed one week in duration. Individuals who were currently receiving treatment for alcohol, substance abuse, emotional, or behavioral difficulties; who were currently the subject of any legal action related to alcohol or substance abuse; or who had physical or medical condition that would prevent them from fully participating in the study were excluded (Appendix J).

In exchange for their participation in this study, students were awarded one unit of research credit for each hour of laboratory participation (three units total) in partial fulfillment of course research participation requirements. Further, participants who were randomly assigned to experimental conditions that required they wear the monitoring device were provided with monetary compensation in the amount of $25 at the conclusion of the study. All collateral informants who assisted participants in the study were also compensated with $25 following the study.

Of the 170 students who were screened for eligibility, 127 students were enrolled as participants and 43 were deemed ineligible for participation. The most common reason for ineligibility was failure to meet the minimum drinking requirements (n = 22). Other reasons included pending legal action (n = 5), unwillingness to wear a monitoring device

(*n* = 3), unwillingness to provide a collateral informant (*n* = 3), ongoing treatment for substance abuse (*n* = 2), scheduling conflicts (*n* = 2), and multiple inclusion criteria being unmet (*n* = 8).

Sample Characteristics

The overall sample consisted of 127 participants, of which demographic variables were not reported by one participant. A majority of the remaining participants described themselves as male (*n* = 76, 60.32%), European-American (*n* = 108, 85.71%), single (*n* = 70, 55.56%), and living in off-campus housing (*n* = 82, 65.08%) with roommates (*n* = 101, 80.02%). The mean age for participants was 20.03 years (*SD* = 1.42, range = 18 – 24). Participants were typically designated as college freshman (*n* = 57, 45.23%), enrolled in an average of 13.87 credit hours (*SD* = 2.12, range = 6 – 19), and estimating their current or most recent grade point average to be 3.06 (4-point scale, *SD* = 0.50, range = 1.70 – 4.00). A minority of the sample endorsed current employment (*n* = 46, 36.51%), and reported working an average of 8.62 hours per week (*SD* = 11.51, range = 0 – 60). Approximately 34.92% of the sample reported membership in a Greek social organization. A summary of the overall sample's demographic and baseline data is provided in Tables 2.1-2.3.

Baseline measures of typical drinking patterns and associated consequences were also examined. On measures of drinking behaviors, the modal response for number of drinks typically consumed on weekend evenings was "19 or more" mean = "7-8 drinks", range = "0" – "19 or more"). Participants endorsed an average of 10.2 of 24 possible consequences (*SD* = 4.19, range = 1 – 20) associated with alcohol use on the Brief Young Adult Alcohol Consequences Questionnaire. This level of responding is consistent with a

50% chance of experiencing symptoms ranging from doing embarrassing things while drinking to an inability to recall long periods of time while drinking. Participants also scored an average of 13.28 on the Alcohol Use Disorders Identification Test (*SD* = 4.61, range = 5 – 26), indicative of problematic patterns of alcohol consumption.

Of the 127 participants who were enrolled in the study, only 96 were included in the final analyses. Despite having responded otherwise to pre-screening questions during the recruiting process, 21 individuals reported during the baseline assessment that their typical drinking practices failed to satisfy the requirements for inclusion in the study. Three participants in conditions requiring the use of a monitoring device elected to have the device removed early and subsequently withdrew from the study between the time of the baseline and follow-up assessments (two of these individuals reported being "uncomfortable" with the idea of being monitored constantly and one indicated concerns about being unable to remove the device while traveling out of town during the study). Two participants who were in conditions that required collateral informants failed to provide collaterals, despite completing all other aspects of the study. One participant failed to provide responses to any baseline assessments and one participant tested positive for recent alcohol consumption (BrAC = +0.25) at the time the assessments were completed. The remaining three participants were excluded from the final analyses given that the results of their responses classified them as outliers and their inclusion violated assumptions of homogeneity of variances between groups. Excluded participants were distributed randomly throughout the experimental conditions [$\chi^2(3, n = 127) = 1.02, p = 0.797$].

Analyses were conducted to determine the relationships between the samples of participants who were included or excluded from the overall analyses. For each of the demographic variables previously identified, Chi-square tests of association were conducted on those that were categorical in nature and one-way analysis of variance tests on those that were continuous. Significant differences were observed for gender $\chi^2(1, n = 126) = 9.20$, $p = 0.002$, such that females were excluded approximately twice as often as males (38% and 17% exclusion, respectively). Significant differences were also observed on measures of typical alcohol consumption including typical quantity of alcohol consumed on weekend evenings [F (1, 125) = 11.16, $p < 0.001$], and on measures of maximum quantity of drinks consumed per occasion [F (1, 125) = 39.49, $p < 0.001$]. These differences are expected given that 21 of the 31 excluded participants failed to achieve minimum inclusion criteria for patterns of drinking. Of these 21 individuals, 15 were female, and when controlling for variables of drinking quantity, gender differences between the included and excluded groups failed to achieve significance. No other significant differences were observed between the inclusion and exclusion samples for any of the demographic or baseline variables. Summary demographic and baseline data are provided for the exclusion group in tables 4.1-4.3. Additionally, summary results of demographic comparisons between included, excluded, and overall participant samples are provided in Tables 1.1-1.3

In the final analyzed sample of 96 participants, demographic characteristics were similar to those of the overall sample of participants enrolled, previously described. Specifically, the sample was predominantly male (n = 65, 67.71%), European-American (n = 81, 84.38%), single (n = *53*, 55.21%), and living in off-campus housing (n = 65,

67.71%) with roommates (*n* = 77, 80.21%). The mean age for the group was 20.05 years (*SD* = 1.43, range = 18 – 24). Participants were typically college freshman (*n* = 44, 45.83%), enrolled in a mean of 13.96 credit hours (*SD* = 2.07, range = 6 – 19), and estimating their current or most recent grade point average to be 3.01 (4-point scale, *SD* = 0.50, range = 1.70 – 4.00). Approximately one third of the sample endorsed current employment (*n* = 35, 36.45%), and reported working an average of 8.89 hours per week (*SD* = 11.79, range = 0 – 60). Finally, 34.38% of the sample reported affiliation with a Greek social organization.

Also similar to the overall sample of participants, the final analyzed sample reported high levels of drinking behavior at the baseline assessment. The modal response for number of drinks typically consumed on weekend evenings was “19 or more” with a slightly higher mean of “11-12 drinks” and a range of “0 – 2 drinks” – “19 or more.” Participants endorsed an average of 10.30 of 24 possible consequences associated with alcohol use on the (*SD* = 4.28, range = 1 – 20) BYAACQ, consistent with the same level of consequences previously described in the overall enrolled sample. Participants also scored an average of 13.39 points on the Alcohol Use Disorders Identification Test (*SD* = 4.62, range = 5 – 26), also indicative of problematic patterns of alcohol consumption, as with the overall sample. Summary demographic and baseline statistics for the final analyzed sample are provided in Tables 3.1-3.3.

Apparatus

Secure Continuous Remote Alcohol Monitor (SCRAM). The Secure Continuous Remote Alcohol Monitor (SCRAM) is a portable, wearable electronic device for continuously measuring alcohol consumption (Hawthorne & Wojcik, 2004). The device,

manufactured by Alcohol Monitoring Systems, Inc., relies on the measurement of ethanol in insensible skin perspiration to produce an estimate of transdermal alcohol concentration (TAC). While not equivalent to blood-alcohol concentrations (BAC) or breath-alcohol concentrations (BrAC), SCRAM measurements have been shown to have both high sensitivity and specificity as well as to produce TAC's that are highly correlated with other measures of alcohol consumption (Sakai et al., 2006). These findings were supported in a pilot feasibility study by Leffingwell (2007), with both studies indicating that evidence tended to favor SCRAM measurements whenever discrepancies were found between these and self-reports.

Three pieces of data can be extracted from SCRAM recordings of alcohol use episodes. The first is *Peak TAC* and reflects the highest single recording of TAC during an alcohol use episode. The second is *Total Area Under the Curve (TAUC)*, a value that reflects a summary measure of trandermal alcohol levels detected by the SCRAM. The third is simply a dichotomous variable that indicates whether a drinking event occurred or not. Alcohol consumption results in a characteristic "consumption curve" of TAC recordings (see Figures 6 and 7). This data can be used to examine reliability of self- and collateral-reports of whether or not alcohol use occurred on given days.

In the current study, second generation SCRAM ankle bracelets (SCRAM-II) were used as independent secondary measures of alcohol consumption (Figure 2). Participants in experimental conditions that include SCRAM measures were fitted with the bracelets during the first day of the study, at which time they were also given special instructions regarding their appropriate use and care. Participants were asked to wear the devices for a period of one week and had them removed at the time of the follow-up

assessment. Throughout the week, participants also had the opportunity to have their bracelets adjusted for comfort or removed if they so desired. In total, two participants requested that their bracelets be adjusted and three participants asked to have them removed and subsequently withdrew from the study.

Alco-Sensor FST. The Alco-Sensor FST ™ was developed by Intoximeters Incorporated and is a portable hand-held device used for testing breath-alcohol concentrations (BrAC). It utilizes an electrochemical fuel-cell that when activated, generates an electronic response to the provided breath sample that is proportional to the breath-alcohol concentration within that sample. The device is capable of detecting breath-alcohol concentrations ranging from 0.00 to 0.44 and provides a digital output of this level within 5-10 seconds of processing the breath sample (Figure 3). All participants were asked to submit to a breathalyzer test prior to the completion of any self-report measures to ensure they were free from alcohol at the time they responded to assessment measures. Further, this test ensured that participants who were required to wear SCRAM bracelets were able to provide an accurate baseline reading of 0.00 at the time that the bracelet was installed and activated.

Standard Drink Calculator. A software-based standard drink calculator was developed for use in this study to standardize the reporting of alcohol beverages across participants. The calculator provided participants with a range of typical beverages containing alcohol as well as a variety of typical beverage containers. Users input the number of drinks consumed of each beverage type and size, and the calculator converted these to a total number of standard drinks using the assumption that each standard drink should contain approximately 0.6 fluid ounces of pure ethanol. While this calculator only

approximated standard drinks, it was designed for this study to circumvent any existing knowledge (or lack of knowledge) by participants about standard drinks and provide consistent estimates of drinking quantities across participants. A screenshot of the calculator is provided in Figure 4.

Participant Measures

Demographic Questionnaire (Appendix K). All participants were asked to complete a basic demographic questionnaire. Items assessed included age, height and weight, gender, ethnicity, relationship status, living situation, Greek-life affiliation, college class standing, major area of study, grade-point-average, and occupational status.

Daily Drinking Questionnaire (DDQ; Appendix L). The Daily Drinking Questionnaire (DDQ) assesses typical drinking patterns by asking individuals to consider the last month and report the average number of alcohol beverages consumed for each day of the week during that period. It was first used by Collins and Marlatt (1985) as an abbreviated version of the Drinking Practices Questionnaire (DPQ; Cahalan, Cisin, & Crossley, 1969) where the two measures were found to demonstrate moderate convergent validity, $r(52) = 0.50$, $p = .001$. In its current form, modified by Dimeff, Baer, Kivlahan, and Marlatt (1999), the DDQ also assesses typical number of hours spent drinking during the same time period. The DDQ was utilized in this study as a baseline measure of the participant's typical drinking patterns.

Quantity and Frequency Questionnaire (QFQ; Appendix M). Quantity and frequency questionnaires provide very general estimates of typical alcohol consumption. These measures commonly consist of three questions including how many beverages containing alcohol are consumed on a typical day, how many days alcohol is consumed

in a typical week, and maximum number of beverages containing alcohol consumed on a single occasion during the preceding month. In the current study, this measure was used to assess the participants' typical drinking patterns, as well as to verify that these patterns surpassed the minimum drinking threshold required of participants for inclusion in the study. Using the measure in this way, data from 21 participants were excluded from analysis as failing to meet the minimum drinking criteria for inclusion.

Alcohol Use Disorders Identification Test (AUDIT; Appendix N). The Alcohol Use Disorders Identification Test (AUDIT) is a ten-item instrument designed to detect harmful and hazardous alcohol use as well as alcohol dependence symptoms. The measure was developed over a two-decade period as a collaborative project at the direction of the World Health Organization. Six countries participated in the development of the measure, with a diverse sample of 1888 persons (both drinkers and non-drinkers) from various cultural backgrounds. The original pool of 150 test items (being only those which translated literally cross-nationally) was reduced to ten items measuring the domains of alcohol consumption, drinking behavior, adverse reactions, and alcohol-related problems. These items are rated by individuals on a scale of 1-4 with an overall test score that ranges from 0-40; and a cutoff score of 8 or greater being indicative of harmful drinking practices. Saunders and colleagues (1993) described the measure as valid, and having high levels of overall sensitivity (92%) and specificity (94%) using this cutoff (Saunders, Aasland, Babor, De La Fuente, & Grant). Further, the test has been demonstrated to have both high levels of internal consistency ($\alpha = 0.80$; Fleming, Barry & MacDonald, 1991) and test-retest reliability ($r = 0.86$; Allen, Litten, Fertig, & Babor, 1997).

Brief Young Adult Alcohol Consequences Questionnaire (BYAACQ; Appendix O). The Brief Young Adult Alcohol Consequences Questionnaire (BYAACQ) is a concise (24-item) but comprehensive measure for assessing alcohol problem severity in college students. It is an abbreviated version of the relatively new 48-item YAACQ (Read, Kahler, Strong, & Colder, 2004) and was constructed and analyzed using item response theory accounting for characteristics of item fit, discrimination, and severity. The current model is unique in that items on the measure tend to be discrete and additive across the continuum of responses, and cover a broad range of problem severity. The measure has been evaluated on a moderate sample of 340 individuals (approximately equal numbers of males and females), and item responses were not found to differ significantly by gender. The internal consistency of the questionnaire was high, having a Cronbach's α of 0.83, and the measure was highly correlated to its parent measure (YAACQ), $r(340) = 0.95$ (Kahler, Strong, & Read, 2005).

Brief Timeline Follow-back Questionnaire (BTFQ; Appendixes P). Timeline follow-back procedures typically consist of retrospective daily estimations of alcohol consumption and rely on cuing techniques to aid in memory recall. Unlike other quantity-frequency measures which generally ask participants to aggregate responses into averages, timeline follow-back procedures are more sensitive to specific drinking episodes over a broad timeframe. As the name implies, these procedures typically make use of a calendar or timeline to prompt respondents for specific events, and then to use these events to cue recall about drinking behaviors (Sobell & Sobell, 1992). Using this method, a Brief Timeline Follow-back Questionnaire (BTFQ) was developed for this study to assess alcohol consumption over a one-week period.

Alcohol Assessment Context Questionnaire (AACQ; Appendixes Q1-4). The Alcohol Assessment Context Questionnaire (AACQ) was developed specifically for this study as a means of measuring the extent to which participants perceive assessment variables as influencing their alcohol consumption and response behavior during the study. More specifically, the measure assesses for perceived influences of human collaterals, electronic monitoring devices, and assessment setting (research, clinical, and legal) both on actual alcohol consumption and on self-reported responses related to that consumption. All participants were asked questions about all relevant domains, but questions were posed either as actual or hypothetical depending on the experimental conditions to which the participants are assigned.

Participant Satisfaction Questionnaire (PSQ; Appendix R). A Participant Satisfaction Questionnaire (PSQ) was used to assess participants' reactions to the study. One section, in particular, included a participant evaluation of the SCRAM-II bracelets, using the same questions as those utilized in earlier studies evaluating the device's predecessor (Sakai et al., 2006; Leffingwell, 2007).

Collateral Measures

College Drinking Collateral Questionnaire (CDCQ; Appendix S). Several studies have documented that collateral characteristics directly impact level of agreement between self-report and collateral-report measures (Sobell et al., 1997; Laforge et al., 2005). The CDCQ was developed for this study as a means of assessing personal characteristics of the collateral (secondary) informant. Collaterals provided information that included age, gender, academic status, nature and duration of relationship to

participant, familiarity with the participant overall, and familiarity with the participant's behaviors related to alcohol consumption.

Brief Timeline Follow-back Questionnaire – collateral version (BTFQ-cv; Appendix T). The collateral version of the BTFQ was very similar to the one completed by participants. However, unlike participants who reported on their own alcohol consumption during the study, collaterals were asked to report on the participants' drinking behavior, rather than their own. In addition, collaterals were asked to report on other factors such as the basis for their knowledge of their estimates of the participants' behavior as well as their level of confidence in those estimates.

Design and Procedure

Prior to participant recruitment, all members of the research team completed training in the ethical treatment of research subjects, in the specific protocols of this study, and in the appropriate use of the aforementioned laboratory equipment. To facilitate the accurate processing of participants through each of the four experimental conditions, all materials for each condition were clearly identified with color codes and labels and each participant was assigned a punch-card that members of the research team used to track the participant's progress through each of the requirements of her/his assigned experimental condition.

At the onset of participant involvement, informed consent was obtained from all participants and collateral informants (Appendix D). Upon entering the study, participants were randomly assigned to one of four experimental conditions, reflecting the use of a collateral informant, a scram bracelet, both, or neither. Participants in condition one were assessed by self-report only; participants in condition two by self-

report and wearing a SCRAM bracelet; participants in condition three by self-report and collateral informant; and participants in condition four by self-report, by collateral informant, and by wearing a SCRAM bracelet. Self and collateral report measures were self-administered, computer-based questionnaires, completed by participants at computer terminals in the research laboratory facilities. When responding to any questions related to drinking quantities, participants were instructed to use the Standard Drink Calculator to help standardize the responses across participants and to reduce the likelihood of errors on the part of the participants in estimating their drinking quantities.

Baseline Assessment. Baseline assessments were conducted on Tuesdays during the fall semester. Written informed consent was obtained from all participants after which a member of the research team explained the process and expectations of the study to the participant and addressed any questions or concerns they may have had. All participants were then asked to submit to a breathalyzer test to ensure that they were free from alcohol at the time that they completed the initial assessment measures. Baseline assessments were then completed which included the Demographic Questionnaire, the Daily Drinking Questionnaire (DDQ), the Quantity-Frequency Questionnaire (QFQ), the Brief Young Adult Alcohol Consequences Questionnaire (BYAACQ), and the Alcohol Use Disorders Identification Test (AUDIT).

In addition to these measures, participants in conditions two and four were asked to contact an individual who would be able and willing to serve as a collateral informant for the participant at the time of the follow-up assessment. Those who were unable to reach a suitable individual during their research appointment were asked to provide the names and contact information of their potential collaterals to the research team so that

they could be contacted at a later time regarding their participation. Also at the time of the baseline assessment, participants in conditions three and four were fitted with SCRAM ankle bracelets that they were required to wear continuously until the time of their follow-up assessments. All participants who were assigned to a condition that required either a collateral informant or a SCRAM bracelet completed additional participant agreements consenting to the specific requirements of their respective experimental conditions. These supplemented the general informed consent already obtained, and ensured that participants were fully informed of the nature of their specific involvement in the study. Before exiting the laboratory at the completion of their baseline assessments, participants were asked to schedule their follow-up appointments for the following week.

Follow-up Assessment. Six days after the baseline assessment, all participants returned to complete a short-term follow-up assessment. The purpose of this follow-up was to measure the actual frequencies and quantities of alcohol consumed by participants during the week of their participation in the study. The measures used during this second assessment included the Brief Timeline Follow-Back Questionnaire (BTFQ) and the Alcohol Assessment Context Questionnaire (AACQ). These measures, while assessing the same domains across experimental conditions, were modified to specifically address the unique aspects of each experimental condition, individually. Additionally, at the time of the follow-up assessment collateral informants were asked to complete the College Drinking Collateral Questionnaire (CDCQ) as well as a modified version of the Brief Timeline Follow-back Questionnaire (BTFQ-cv) that asked the collateral about her/his knowledge of the participant's alcohol consumption as well as the basis for this

knowledge and level of confidence in her/his estimates. Also at this time, participants in conditions three and four had their SCRAM bracelets permanently removed. Prior to concluding their participation at the follow-up assessment, participants in all conditions verified their contact information so that they could be contacted regarding their compensation and for participant debriefing at the conclusion of the study.

Confidentiality and Deception

Confidentiality. Given the sensitive nature of the information being collected in this study, special precautions were utilized to help ensure anonymity for all participants (and collaterals). First, a unique subject identification number was created for each participant in the study. This number included the last four digits of the participant's social security number followed by a two-digit number representing the participant's birth month, and a two-digit number representing the participant's birth day. A key connecting identification numbers with participant names was maintained on a secure list, separate from any participant data, and stored in a locked file cabinet in a locked room to which only members of the research team had access. To further protect the anonymity of participants and the now archived data collected during this study, an application is pending to obtain a Certificate of Confidentiality from the National Institute of Health. The purpose of this certificate is to "protect identifiable research information from forced disclosure . . . in any civil, criminal, administrative, legislative, or other proceeding, whether at the federal, state, or local level" (National Institute of Health [NIH], 2007).

Deception. The primary intent of the study was to explore what impact, if any, collateral informants may have on a participant's self-reported alcohol consumption. Use of the SCRAM bracelets in this study provided an independent third measure against

which the self-report could be compared. However, the introduction of this third measure created the potential for the SCRAM bracelet to also be viewed by the participant as serving a role comparable to that of the collateral. In order to minimize the impact of the bracelet as a measure of alcohol consumption, limited deception was necessary in describing the purpose and functions of the SCRAM. More specifically, the SCRAM was described to participants as an electronic monitoring device designed to measure physiological functions including pulse, respirations, skin temperature, and perspiration. With much of the focus of the study (including screening questions) on alcohol consumption, participants were told the purpose of wearing the bracelet was to continuously measure the body's physiological response to normal daily activities, both in the presence and absence of alcohol (but specifically excluding any reference to the actual measurement of alcohol consumption; Appendix E). Special water-proof stickers were affixed to the SCRAM bracelets to conceal the SCRAM logo on the bracelet's outer casing, to decrease the likelihood that participants would learn of the bracelet's actual functions. This sticker served the additional purpose of identifying the bracelet as property of the research laboratory (and thereby identifying the bracelet wearer as a research participant and not a criminal offender).

In order to further protect participants from suspicion of criminal activity that may arise in response to the bracelet's presence, participants were also issued laminated wallet-cards identifying them as research participants, and providing contact information for the laboratory in the event of an emergency (Figure 5). Letters were also sent to local law enforcement agencies informing them of the study in the event they may encounter a research participant during the course of their duties (Appendix G). Two research

participants reported encounters with law enforcement while wearing the SCRAM bracelets and indicated that the encounters were resolved without incident upon presenting their participant ID card.

The deception in this study was not believed to have any adverse consequences for the participant, given that s/he was fully aware that her/his alcohol consumption was being assessed through other measures, and given the level of precautionary measures that were recommended to the participants in their bracelet agreements. At the conclusion of the study, careful debriefing was conducted to inform participants of the actual nature of the SCRAM bracelets (Appendix E). It is believed that this minimal level of deception was unlikely to result in any negative consequences for the participants, and that any potential risks that may have been associated with the deception were outweighed by the anticipated benefits of better understanding and possibly improving some of the problems associated with current methods of alcohol assessment.

Scram Data Interpretation

Several issues must be considered in the interpretation of drinking curves. First, individual characteristics can impact the rate at which individuals eliminate alcohol from the body. Given this, drinking events may also be detected at variable rates between persons. A drinking event can be observed transdermally one to four hours after the event would be detected from a comparable breath analysis (Hawthorne, personal communication, July 7, 2009). Further, the sensitivity of the SCRAM device makes it possible for the unit to detect alcohol in very small quantities that may not reflect the consumption of an alcohol beverage. This is possible given that alcohol can be a by-product of other naturally occurring chemical processes in the body. It is also possible

that alcohol can be consumed by the individual from sources other than alcohol beverages (e.g. mouthwash and other consumer products) but in doses that are still detectable by the SCRAM. To differentiate between alcohol likely attributable to drinking events and that which may be attributable to other sources, an a-priori threshold was needed. Alcohol Monitoring Systems, Inc. has determined that any alcohol event which raises the transdermal alcohol concentration (TAC) to 0.020 or above can be reliably attributed to the consumption of an alcohol beverage. Thus, for purposes of this study, any TAC reading greater than or equal to 0.020 was considered a positive drinking event.

Another issue in the interpretation of alcohol curves with this sample was that it was a relatively common occurrence to observe drinking events that contained multiple peaks and spanned multiple days. In order to make comparisons between observed transdermal alcohol curves and total self-reported drinking levels, it was necessary to separate drinking curves into their respective days based on the most likely onset of the drinking event. The most common pattern of drinking observed in this study was that of drinking events which were initiated late in the evening and which subsequently continued into the following morning. Data from self-reports suggest that even those drinking events which began in the early morning hours were attributed by the participants to the previous evening's events. Given this, it was necessary to operationally define the "drinking day" for the transdermal output in order to best determine the appropriate day that a drinking event was initiated for purposes of comparison with the self-report. For the purposes of this study, any drinking event initiated before 4:00 AM was analyzed as a drinking event for the preceding day. Further, because transdermal

events may be observed up to 4 hours after the event occurred, this window was expanded to use a cut-point of 8:00 AM for transdermal outputs. Thus any drinking event detected by the SCRAM and reported prior to 8:00 AM was recorded as a drinking event that was likely initiated by the participant on the preceding day.

The final issue concerns drinking events that were observed transdermally to span multiple days, but which may have been reported by the participant as separate events occurring on difference days.. For the purposes of this study, two conditions had to be satisfied before a transdermal alcohol curve would be split and calculated as separate events. First the drinking event had to span multiple days, using the previously identified operational definition of a "drinking day." Second, two or more distinct peeks (identified by a steady decrease in transdermal alcohol readings followed by a subsequent increase) within this multi-day curve had to be present and observed to have onsets that would classify the drinking events as having been initiated on separate drinking days.. In this study, the onset of a drinking event was defined as the lowest non-zero reading in a confirmed drinking event (peak TAC $\geq$ 0.020) on the increasing side of the drinking curve. When two or more peaks were present in a single alcohol curve, this point corresponded to the lowest point between the decreasing side of the first curve and the increasing side of the next.

In examining a SCRAM output, the transdermal alcohol curve was represented by the level of transdermal alcohol concentration (TAC) on the y-axis as a function of time on the x-axis. SCRAM bracelets take TAC readings in semi-random intervals that occur approximately one-half hour apart. For each reading, the device recorded the date, time, and transdermal alcohol concentration (as well as other measures such as infrared

reflectivity of the skin and skin temperature which were used to detect device tampering by the bracelet wearer; Figure 6). Treating each reading as a discrete data point (y-axis = TAC, x-axis = time), area calculations were performed between consecutive data points. In this study, the sum of the trapezoidal areas created by adjacent TAC readings was used to approximate the area under each drinking curve. Each trapezoid was created by using as the parallel bases the distance from the x-axis (TAC = 0.000) to the respective positive TAC reading, and using as the height of the trapezoid the time elapsed between adjacent readings. Any non-zero trapezoidal area created by a curve that had at its peak a TAC $\geq$ 0.020 was included in approximating the area of that curve (Figure 7). In cases where multiple drinking curves were initiated on the same day, areas for all of the curves were summed together to arrive at a total area calculation for the day.

CHAPTER IV

RESULTS

Randomization Check

Upon enrollment in the study, participants were randomly assigned to one of four experimental conditions. Ninety-six of the original 127 participants were included in the final analyses, and were distributed among the four groups as follows: 27 participants in condition 1 (self-report only), 21 participants in condition 2 (self-report + SCRAM bracelet), 25 participants in condition 3 (self-report + collateral report), and 23 participants in condition 4 (self-report + SCRAM bracelet + collateral report). To assess for randomization among these groups, chi-square and one-way ANOVA tests were conducted on each of the demographic characteristics assessed at baseline. An a-priori significance level of $\alpha = 0.10$ was used to ensure any significant or marginally significant between group differences were identified at baseline and co-varied appropriately in subsequent analyses. Due to the small numbers in some cells (e.g. ethnicity) some demographic variables were collapsed into broader categories to satisfy assumptions of the tests necessary for valid interpretation. Significant differences were observed for typical drinking quantity [$F(3,92) = 3.12$, $p < 0.030$] such that participants in condition 3 reported significantly lower typical drinking quantities at baseline as measured by the quantity-frequency questionnaire compared to participants in condition 2. Additionally, differences were also observed between groups for Greek life affiliation [X^2 (3, $N = 94$) = 7.610, $p < 0.055$] such that participants in groups with collaterals (three and four) were

less likely to endorse Greek membership than participants in the no-collateral groups (one and two). No other significant differences were observed among any of the other baseline variables assessed. Complete results of these analyses are displayed in Tables 5.1-5.2.

Preliminary Analyses

Several studies utilizing collateral informants have found that self-report measures tend to result in higher estimates of alcohol consumption than reports made by collateral informants (O'Farrell & Maisto, 1987, Maisto & Connors, 1992; Sobell et al., 1997). Cunningham, Wild, and Cordingley (2004) have suggested that one explanation for this finding is that the presence of collateral informants may cause respondents to make self-reports more cautiously, providing an "upper-limit" estimation of their drinking behaviors. However, a review of the research literature revealed a very limited number of studies where the presence or absence of collateral informants was experimentally controlled-for as in this study. Based on the above stated findings, it was hypothesized that when the use of a collateral condition was systematically varied:

> H_1: Participants in the collateral conditions would have significantly higher self-reported alcohol consumption (based on total number of total drinks consumed) than participants in no-collateral conditions, regardless of data obtained through secondary sources (observed transdermal readings or collateral reports).
>
> H_2: Self-report measures of alcohol consumption would be more highly correlated to SCRAM measures in the collateral condition than in the no-collateral condition.

In order to investigate the first hypothesis (H_1), a 2x2 (collateral x SCRAM) between subjects factorial analysis of covariance (ANCOVA) was conducted, comparing

the mean levels of self-reported alcohol consumption among the four groups, and controlling for baseline measures of typical drinking and Greek life affiliation. The dependent variable in this analysis was the calculated total number of self-reported standard drinks actually consumed by the participant during the study, as measured by the timeline follow-back questionnaire. In calculating the dependent variable, drinks consumed during the first and last days of the study were excluded to control for differences with respect to when measures were completed by participants, such that the self-reported total included only those drinks consumed during the five-day period beginning on Wednesday and concluding on Sunday.

Mean levels of self-reported drinking were observed as follows and are reported in Table 6. For the assessment only condition, $M = 21.8269$ ($SD = 12.73$); for the bracelet condition, $M = 22.27$ ($SD = 10.22$); for the collateral condition, $M = 14.17$ ($SD = 10.73$); and for the bracelet + collateral condition, $M = 20.36$ ($SD = 7.14$). Overall, the means show a general trend toward lower levels of self-reported drinking in the two collateral conditions, with the lowest self-reported drinking observed in the collateral (no-bracelet) condition (Figure 8).

In comparing the group means, three effects were analyzed (Table 7). The first was the main effect for assignment to collateral vs. no-collateral conditions. It was predicted that self-reports made by participants in collateral conditions would reflect significantly higher levels of alcohol consumption than those in non-collateral conditions. This result failed to achieve significance at the $\alpha = 0.05$ level [$F(1, 88) = 2.86$, $p = 0.09$, $\eta^2 = 0.03$]. It should be noted that when the analysis was run without the covariates, an effect was observed such that participants in the collateral conditions reported consuming

significantly fewer drinks than those in the no-collateral conditions [$F(1, 88) = 3.96$, $p = 0.050$, $\eta^2 = 0.04$], consistent with their typical drinking practices as reported at baseline. The second result was the main effect for assignment to SCRAM vs. no-SCRAM conditions. Because deception was used regarding the nature of the SCRAM's functionality, it was expected that this main effect would not be statistically significant (self-reported levels of alcohol consumption should not differ significantly between the bracelet and no-bracelet conditions). As expected, no significant differences were observed for this effect [$F(1, 88) = 1.67$, $p = 0.20$, $\eta^2 = 0.02$]. Finally, because it was expected that there would be no significant effect regarding the use of the SCRAMs, it was further expected that there would be no significant interaction between the two main effects previously described. This interaction also failed to achieve significance at the $\alpha = 0.05$ level [$F(1, 88) = 1.67$, $p = 0.20$, $\eta^2 = 0.02$]. Based upon these analyses, Hypothesis One (H_1) was not supported.

A second hypothesis (H_2) of this study is that self-report measures and SCRAM measures will be more closely related for participants in the collateral than in the no-collateral condition. To test this hypothesis, correlations were calculated among self-reports and SCRAM variables for each of the participants in the SCRAM conditions. Mean differences of these correlations between the collateral and no-collateral groups (for the two SCRAM conditions) were then tested for significance using an independent-samples t-test.

In order to derive the correlation coefficients for each participant, two pieces of data were needed that reflected the total amount of alcohol consumed by each participant for a given alcohol event. For the SCRAM bracelet, this was assessed using the

calculated value representing the total area under the alcohol curve(s) for all drinking events initiated on the operationally defined drinking day. For self-reports, it was assessed by calculating the total number of standard alcohol beverages consumed for each day of the study as reported in the timeline follow-back questionnaire. Because data from both measures are continuous variables assumed to be in direct relation, a Pearson product-moment correlation coefficient was used to quantify the relationship between self-report and SCRAM measures for each participant.

As with the previous analyses, data from the first and last day of the study were excluded to ensure consistency across participants. Individual correlations were calculated for each participant using five self-report scores of total drinks and five calculated areas for the SCRAM bracelet. Correlations were then aggregated across individuals within each of the experimental conditions to test for between-groups differences. It was hypothesized that participants' self-report scores would be more strongly correlated to SCRAM measures when collaterals were present. The results of the current study failed to support this hypothesis, such that the mean correlations for the participants in the two bracelet conditions did not differ significantly from one another. Specifically, individuals in condition 2 (self-report + bracelet), contributed an average correlation score of $r^2 = 0.77$ ($SD = 0.33$), and individuals in condition 4 (self-report + bracelet + collateral) contributed an average correlation score of $r^2 = 0.75$ ($SD = 0.36$). The independent samples t-test revealed an overall mean difference of 0.02 that was not statistically significant [$t(40) = 0.21$, $p = 0.84$].

Of note, several participants contributed suspect (zero or negative) correlations that were identified as statistical outliers. When these data points were removed, the

relationship between the self-report and scram measures increased further with corresponding decreases in the respective variances. Specifically, the correlation for participants in the bracelet condition increased to $r^2 = 0.90$ ($SD = 0.11$), and for those in the bracelet + collateral condition the correlation increased to $r^2 = 0.85$ ($SD = 0.18$). The overall mean correlation was observed to be $r^2 = 0.87$ ($SD = 0.15$) with a mean difference of 0.05 that was not statistically significant [$t(35) = 0.98$, $p = 0.34$].

Percent agreement for drinking days was also examined between the self-report and SCRAM measures as a secondary measure of the relationship between these two variables. Percent agreement was determined by the total number of days (out of five) that the presence or absence of alcohol was reported consistently by both the SCRAM and the self-report. For the 40 participants included in the analysis, the overall proportion of agreement was found to be 163/200 instances, or 0.82%. The mean and median percent agreement for each participant was found to be 4/5 instances and the modal percent agreement was found to be 5/5. These data appear consistent with the correlations of actual drinking reported above.

Additional Analyses

In addition to the two primary hypotheses of this study, a number of additional analyses were possible from the other measures being utilized in the study. In particular, the Alcohol Assessment Context Questionnaire (AACQ) provided useful data to assess the degree to which participants perceived any impact of the bracelet or collateral on their drinking behavior or on their responding to questions about that drinking behavior. Chi-square tests of association were used to assess each of the dichotomous response sets (e.g. “Did the bracelet influence they way you responded to questions about your drinking?”)

and one-way ANOVA's were utilized to assess each of the continuous variables in the questionnaire (e.g. "How much did it have an impact?"). The results of these analyses are presented in Tables 8.1-8.8. Overall, participants' responses indicated that they believed the presence or absence of the bracelet or collateral to have little impact on their alcohol consumption and their responses to questions about their alcohol consumption.

CHAPTER V

DISCUSSION

Given the magnitude of problems associated with high-risk drinking among college students, it remains important to develop and refine research methods that will continue to inform the future directions of the field. Perhaps one of the biggest challenges faced by the field today is that there is still no universally accepted gold-standard for measurement in the field of alcohol and substance abuse research. Like much of the research coming out of the behavioral sciences, the field has come to rely upon the self-report as the primary means of data collection. Unlike many other domains within the behavioral sciences, the field of substance abuse research continues to behave somewhat paradoxically in how it views self-reports. For decades the field has maintained a healthy skepticism of the veracity of self-reports, all the while continuing to exhibit heavy reliance on them just the same.

Much attention has been paid to a variety of methods employed to facilitate better data collection. At the forefront of the search has been the use of corroborative reports, often provided by collateral informants. In recent years, the field has witnessed a rather interesting shift. What once was a debate about the veracity and utility of the self-report in the field, has instead become a debate about the veracity and utility of corroborating reports. Despite all the strong criticisms that have poured out of the research literature on both sides of this debate, a review of the published literature on this topic has included very few well-controlled studies that specifically addressed the impact of collateral

reports as a primary research question. Those which have been identified have yielded mixed results, and utilized varying degrees of control in their explorations of this question.

This study set out to explore the impact of specific corroborating sources on the accuracy of self-reports provided by a college sample of high-risk alcohol consumers. Two hypotheses were evaluated in this study. First, it was hypothesized that the inclusion of a collateral informant in the assessment process would systematically alter the participant's responding. Previous findings in the research literature have consistently documented that when self-reports and collateral reports were both collected and compared, the self-report tended to document higher levels of alcohol and/or substance use (O'Farrell & Maisto, 1987; Leigh, 2000).

Several plausible explanations have arisen to explain the higher levels of self-reporting. Many researchers have argued that the primary reporter has more familiarity with her/his own behavior, and that it would be unlikely for them to over-report on this behavior. However, Connors and Maisto have noted that these comparisons were all derived from studies in which collaterals were involved and the principal reporters were aware of their involvement (2003). A similar argument was made by Cunningham, et al. who suggested that the inclusion of the collateral may influence the principal reporter to err on the upper-side of her/his own reporting. Based on these arguments, it was believed in the current study, that the mere presence of a collateral (along with the participant's awareness of the collateral's involvement) should significantly impact the participant's own responding, and that this would be reflected in higher levels of self-reported drinking. The results of the current study failed to find any significant differences

between groups that differed based on collateral involvement. Despite the non-significant results, these findings may shed light on a long running debate about the utility of collateral informants. The question as it was posed in this study did not seek to "validate" or "invalidate" the self-report by way of a collateral informant. Rather, the question here was whether including a collateral report would systematically alter the self-report. Using a fully-crossed, randomized design which systematically varied the inclusion of collaterals, no significant between-groups differences were observed. This finding would suggest that among heavy drinking college students, the mere inclusion of a collateral does not in itself significantly impact the contents of the self-report.

Like the first hypothesis, the second hypothesis also sought to explore the impact of including collateral reports on self-reported alcohol consumption. However, unlike previous research which has addressed this question primarily by comparing the self- and collateral reports, the current study instead compared the relationship between the self-report and an independent objective measure, and hypothesized that this relationship would be stronger when collateral informants were used. Continuous transdermal alcohol monitoring technology made it possible to collect ongoing objective data on the participant's alcohol consumption for the duration of her/his involvement in the study. The relationship between this objective monitoring and the participant's self-reported alcohol consumption was evaluated and compared among two groups who differed only with respect to the inclusion (or not) of collateral informants. Again, no significant differences were observed between groups.

The overall average correlation that was observed between the self-report and the SCRAM bracelet was found to be approximately 0.76 ($M = 0.7627$, $N = 42$, $SD = 0.3430$)

and the observed mean difference in correlations between the groups was found to be 0.02. Two important inferences can be made from these data. First, failure to find a significant difference between the two groups supports the previous finding that the inclusion of collateral informants did not significantly impact the self-reports made in the current study. Further, while the design of the current study does not permit specific conclusions about the validity of self-reports, the relatively high degree of correspondence between the self-reports and SCRAM reports across groups does lend support to other findings in the research literature that have found the reliability of the self-report to be at least adequate for research purposes (Del Boca & Darkes, 2003).

Taken together, the findings of the current study failed to find any significant differences in self-reported alcohol consumption when controlling for the inclusion of collateral informants. These findings are consistent with the perceptions of participants who indicated that they did not believe the inclusion of a collateral informant or a SCRAM bracelet did have (or would have) a noticeable impact on either their drinking behavior or their self-reports of that behavior.

Several limitations exist in the current study. First, the final analyzed sample was relatively small (range = 21 – 27 participants per group). While the overall attrition rate of the study was low (n = 3, 2.36%), a number of participants who completed the study had to be excluded from the analyses due to their failure to meet minimum inclusion criteria as reported at baseline (n = 21, 16.54%). Additionally, the sample of participants tended to be predominantly European-American (n = 81, 84.4%) and male (n = 65, 67.7%), thus it is possible that the findings may not generalize to persons of other demographic make-ups. Participation in this study was also limited to young adult

college students who reported heavy and high-risk patterns of drinking. Because this group represents an extreme subset of the drinking spectrum, it is possible that the results in the current study may represent more conservative findings than would be observed if the sample included participants from the full range of the drinking spectrum (that is, between-group differences might be more easily observed among groups that include participants with less extreme patterns of drinking).

Despite these limitations, a number of interesting observations came out of this study. The use of the SCRAM bracelets in particular have yielded observations that warrant further discussion, in so far as they provided continuous objective data of the participants' alcohol use (free from many of the forms of response bias, recall errors, and other factors that have often raised concerns in self- and collateral reports). Some of these observations alluded to earlier bear a direct and important impact on methods currently used in collecting self-report data. First, college student drinking patterns may not correspond well with self-report questionnaires. Common drinking patterns such as those that initiate in the late evening of one day and terminate in the morning of another, may be susceptible to mis-classification of the drinking event. Similarly, several drinking events were observed in SCRAM outputs to span multiple days. Another common and related observation was the finding that many participants routinely initiated drinking events before they had fully eliminated the alcohol from the previous event (with some participants producing continuous positive alcohol readings for the entire duration of the five-day interval that was analyzed). These observations may require that future research re-evaluate methods of data collection to better account for the patterns of drinking engaged in by the research sample used. Finally, participants' relative satisfaction with

the SCRAM bracelets, in addition to the added data the bracelets provided, their relative expense compared to other sources of corroborative reports, and fact that they provide continuous objective monitoring all suggest that SCRAMs may provide an appropriate measurement tool in future alcohol research.

While this study was not able to provide a definitive answer to the long-asked question of "are self-reports valid?" (nor did it set out to do so), it has shed light on a number of factors that are hoped to provide continued benefit to the field of alcohol research by providing information that may enhance the quality of research methodology employed within the field.

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APPENDIXES

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Appendix A

Tables

Table 1.1

Baseline Assessment: Sample Summaries (by analyzed sample)

	Analyzed Sample		Excluded Sample		Overall Sample	
Gender						
Male	65	67.7%	11	36.7%	76	60.3%
Female	31	32.3%	19	63.3%	50	39.7%
Age in years						
mean (stdev)		20.1 (1.4)		19.96 (1.4)		20.1 (1.4)
range		18 – 24		18 – 23		18 – 24
Ethnicity						
European-American	81	84.4%	27	90.0%	108	85.7%
American-Indian	5	5.2%	0	0.0%	5	3.9%
Asian	4	4.2%	1	3.3%	5	3.9%
Bi-racial/Mixed	3	3.1%	0	0.0%	3	2.4%
Hispanic/Latino-a	2	2.1%	0	0.0%	2	1.6%
African-American	1	1.0%	2	6.7%	3	2.4%
Relationship Status						
Single	53	55.2%	17	56.7%	70	55.5%
Committed Relationship	25	26.0%	10	33.3%	35	27.8%
Casual Dating	18	18.8%	3	10.0%	21	16.7%
Living Arrangements						
roommate	77	80.2%	24	80.0%	101	80.2%
live alone	12	12.5%	3	10.0%	17	13.5%
romantic partner	3	3.1%	3	10.0%	6	4.7%
other	3	3.1%	0	0.0%	1	0.8%
parents/guardian	1	1.1%	0	0.0%	1	0.8%
Housing Arrangements						
Dormitory	26	27.1%	11	36.7%	37	29.4%
Off-Campus House	23	23.9%	6	20.0%	29	23.0%
Off-Campus Apt.	21	21.9%	4	13.3%	25	19.8%
Greek Housing	21	21.9%	7	23.3%	28	22.2%
Campus Apt.	5	5.2%	2	6.7%	7	5.6%
Total	96		30		126	

Table 1.2

Baseline Assessment: Sample Summaries (by analyzed sample)

	Analyzed Sample		Excluded Sample		Overall Sample	
Academic Standing						
Freshman	44	45.8%	13	43.3%	57	45.2%
Sophomore	24	25.0%	9	30.0%	33	26.2%
Junior	12	12.5%	4	13.3%	16	12.7%
Senior	15	15.6%	4	13.3%	19	15.1%
Other	1	1.1%	0	0.0%	1	0.8%
Credit Hours						
mean (stdev)	13.96 (2.07)		13.57 (2.29)		13.96 (2.07)	
range	6 – 19		7 – 17		6 – 19	
Estimated G.P.A.						
mean (stdev)	3.01 (0.50)		3.21 (0.47)		3.01 (0.50)	
range	1.70 – 4.0		2.00 – 4.00		1.70 – 4.0	
Employment Status						
Employed	35	36.5%	11	36.7%	46	36.5%
Unemployed	61	63.5%	19	63.3%	80	63.5%
Weekly Hours Worked						
mean (stdev)	8.89 (11.79)		7.73 (10.72)		8.89 (11.79)	
range	0 – 60		0 – 32		0 – 60	
Greek Affiliation						
Yes	33	34.4%	11	36.7%	44	34.9%
No	61	63.5%	19	63.3%	80	63.5%
Other	2	2.1%	0	0.0%	2	1.6%
Total	96		30		126	

Table 1.3

Baseline Assessment: Sample Summaries (by analyzed sample)

	Analyzed Sample	Excluded Sample	Overall Sample
Total Drinks (Wed-Sun)			
mean (stdev)	31.45 (18.2)	25.02 (14.6)	29.96 (17.6)
range	7.0 – 140.1	7.8 – 64.0	7.0 – 140.1
AUDIT Total			
mean (stdev)	13.39 (4.6)	12.93 (4.6)	13.28 (4.6)
range	5 – 26	6 – 23	5 – 26
BYAACQ Total			
mean (stdev)	10.3 (4.3)	9.89 (3.9)	10.20 (4.2)
range	1 – 20	3 – 17	1 – 20
Total Alcohol Expenses			
mean (stdev)	526.6 (803)	258.1 (210)	465.4 (721)
range	10 – 7000	0 – 750	0 – 7000

Table 2.1

Baseline Assessment: Overall Sample (by experimental condition)

	1		2		3		4		Total	
Gender										
Male	23	69.7%	17	60.7%	18	52.9%	18	56.3%	76	60.3%
Female	10	30.3%	11	39.3%	15	44.1%	14	43.8%	50	39.7%
Age in years										
mean (stdev)	20.34 (1.4)		19.58 (1.3)		20.17 (1.3)		19.97 (1.6)		20.03 (1.4)	
range	18 – 24		18 – 23		18 – 23		18 – 24		18 – 24	
Ethnicity										
European-American	27	81.8%	24	85.7%	28	82.4%	29	90.6%	108	85.7%
American-Indian	0	0.0%	2	7.1%	2	5.9%	1	3.1%	5	3.9%
Asian	2	6.1%	0	0.0%	2	5.9%	1	3.1%	5	3.9%
Bi-racial/Mixed	2	6.1%	0	0.0%	1	2.9%	0	0.0%	3	2.4%
Hispanic/Latino-a	1	3.0%	1	3.6%	0	0.0%	0	0.0%	2	1.6%
African-American	1	3.0%	1	3.6%	0	0.0%	1	3.1%	3	2.4%
Relationship Status										
Single	18	54.5%	15	53.6%	17	50.0%	20	62.5%	70	55.5%
Committed Relationship	8	24.2%	7	25.0%	12	35.3%	8	25.0%	35	27.8%
Casual Dating	7	21.2%	6	21.4%	4	11.8%	4	12.5%	21	16.7%
Living Arrangements										
roommate	26	78.8%	25	89.3%	23	67.6%	27	84.4%	101	80.2%
live alone	4	12.1%	2	7.1%	7	20.6%	4	12.5%	17	13.5%
romantic partner	1	3.0%	1	3.6%	3	8.8%	1	3.1%	6	4.7%
other	1	3.0%	0	0.0%	0	2.9%	0	0.0%	1	0.8%
parents/guardian	1	3.0%	0	0.0%	0	0.0%	0	0.0%	1	0.8%
Housing Arrangements										
Dormitory	8	24.2%	9	32.1%	9	26.5%	11	34.4%	37	29.4%
Off-Campus House	10	30.3%	6	21.4%	7	20.6%	6	18.8%	29	23.0%
Off-Campus Apt.	8	24.2%	2	7.1%	10	29.4%	5	15.6%	25	19.8%
Greek Housing	6	18.2%	10	35.7%	4	11.8%	8	25.0%	28	22.2%
Campus Apt.	1	3.0%	1	3.6%	3	8.8%	2	6.3%	7	5.6%
Total	33		28		33		32		126	

Table 2.2

Baseline Assessment: Overall Sample (by experimental condition)

	1		2		3		4		Total	
Academic Standing										
Freshman	14	42.4%	18	64.3%	10	29.4%	15	46.9%	57	45.2%
Sophomore	6	18.2%	6	21.4%	11	32.4%	10	31.3%	33	26.2%
Junior	7	21.2%	2	7.1%	4	11.8%	3	9.4%	16	12.7%
Senior	6	18.2%	2	7.1%	7	20.6%	4	12.5%	19	15.1%
Other	0	0.0%	0	0.0%	1	2.9%	0	0.0%	1	0.8%
Credit Hours										
mean (stdev)	14.00 (2.18)		13.79 (2.11)		13.91 (1.88)		13.75 (2.38)		13.87 (2.12)	
range	9 – 19		9 – 18		7 – 17		6 – 18		6 – 19	
Estimated G.P.A.										
mean (stdev)	3.03 (0.53)		2.99 (0.49)		3.12 (0.49)		3.11 (0.50)		3.06 (0.50)	
range	1.70 – 3.90		2.00 – 4.00		2.00 – 3.90		2.00 – 4.00		1.70 – 4.00	
Employment Status										
Employed	12	36.4%	9	32.1%	14	42.4%	11	34.4%	46	36.5%
Unemployed	21	63.6%	19	67.9%	19	57.6%	21	65.6%	80	63.5%
Weekly Hours Worked										
mean (stdev)	8.54 (14.03)		6.90 (9.79)		9.21 (9.41)		9.54 (12.45)		8.62 (11.51)	
range	0 – 60		0 – 25		0 – 29		0 – 40		0 – 60	
Greek Affiliation										
Yes	12	36.4%	15	53.6%	6	18.2%	11	34.4%	44	34.9%
No	20	60.6%	12	42.9%	27	81.8%	21	65.6%	80	63.5%
Other	1	3.0%	1	3.6%	0	0.0%	0	0.0%	2	1.6%
Total										

Table 2.3

Baseline Assessment: Overall Sample (by experimental condition)

	1	2	3	4	Total
Total Drinks (Wed-Sun)					
mean (stdev)	31.63 (18.9)	32.62 (14.4)	24.74 (10.4)	31.38 (23.4)	29.96 (17.6)
range	9.0 – 112.0	12.0 – 75.0	7.0 – 47.0	7.8 – 140.1	7.0 – 140.1
AUDIT Total					
mean (stdev)	12.88 (5.2)	14.04 (4.2)	12.61 (4.6)	13.77 (4.3)	13.28 (4.6)
range	5 – 25	8 – 23	5 – 25	9 – 26	5 – 26
BYAACQ Total					
mean (stdev)	9.48 (4.1)	11.23 (4.4)	9.34 (3.9)	10.97 (4.2)	10.20 (4.2)
range	1 – 18	3 – 19	1 – 17	4 – 20	1 – 20
Total Alcohol Expenses					
mean (stdev)	684.6 (1302)	365.0 (298)	395.3 (355)	426.3 (486)	465.4 (721)
range	10 – 7000	20 – 1200	25 – 1500	0 – 2500	0 – 7000

Table 3.1

Baseline Assessment: Analyzed Sample (by experimental condition)

	1		2		3		4		Total	
Gender										
Male	20	74.1%	15	71.4%	15	60.0%	15	65.2%	65	67.7%
Female	7	25.9%	6	28.6%	10	40.0%	8	34.8%	31	32.3%
Age in years										
mean (stdev)	20.4 (1.4)		19.6 (1.4)		20.3 (1.2)		19.9 (1.6)		20.1 (1.4)	
range	19 – 24		18 – 23		19 – 23		18 – 24		18 – 24	
Ethnicity										
European-American	21	77.8%	18	85.7%	20	80.0%	22	95.7%	81	84.4%
American-Indian	0	0.0%	2	9.5%	2	8.0%	1	4.3%	5	5.2%
Asian	2	7.4%	0	0.0%	2	8.0%	0	0.0%	4	4.2%
Bi-racial/Mixed	2	7.4%	0	0.0%	1	4.0%	0	0.0%	3	3.1%
Hispanic/Latino-a	1	3.7%	1	4.8%	0	0.0%	0	0.0%	2	2.1%
African-American	1	3.7%	0	0.0%	0	0.0%	0	0.0%	1	1.0%
Relationship Status										
Single										
Committed	14	51.9%	12	57.1%	12	48.0%	15	65.2%	53	55.2%
Relationship	6	22.2%	5	23.8%	10	40.0%	4	17.4%	25	26.0%
Casual Dating	7	25.9%	4	19.0%	3	12.0%	4	17.4%	18	18.8%
Living Arrangements										
roommate	21	77.8%	19	90.5%	18	72.0%	19	82.6%	77	80.2%
live alone	3	11.1%	0	0.0%	5	20.0%	4	17.4%	12	12.5%
romantic partner	1	3.7%	2	9.5%	0	0.0%	0	0.0%	3	3.1%
other	1	3.7%	0	0.0%	2	8.0%	0	0.0%	3	3.1%
parents/guardian	1	3.7%	0	0.0%	0	0.0%	0	0.0%	1	1.1%
Housing Arrangements										
Dormitory	7	25.9%	6	28.6%	5	20.0%	8	34.8%	26	27.1%
Off-Campus House	8	29.6%	5	23.8%	6	24.0%	4	17.4%	23	23.9%
Off-Campus Apt.	7	25.9%	1	4.8%	9	36.0%	4	17.4%	21	21.9%
Greek Housing	4	14.8%	8	38.1%	3	12.0%	6	26.1%	21	21.9%
Campus Apt.	1	3.7%	1	4.8%	2	8.0%	1	4.3%	5	5.2%
Total	27		21		25		23		96	

Table 3.2

Baseline Assessment: Analyzed Sample (by experimental condition)

	1		2		3		4		Total	
Academic Standing										
Freshman	12	44.4%	14	66.7%	6	24.0%	12	52.2%	44	45.8%
Sophomore	5	18.5%	4	19.0%	9	36.0%	6	26.1%	24	25.0%
Junior	6	22.2%	1	4.8%	3	12.0%	2	8.7%	12	12.5%
Senior	4	14.8%	2	9.5%	6	24.0%	3	13.0%	15	15.6%
Other	0	0.0%	0	0.0%	1	4.0%	0	0.0%	1	1.1%
Credit Hours										
mean (stdev)	14.30 (3.98)		13.62 (4.75)		14.00 (1.92)		13.83 (7.15)		13.96 (2.07)	
range	10 – 19		9 – 18		12 – 17		6 – 18		6 – 19	
Estimated G.P.A.										
mean (stdev)	3.01 (0.54)		2.99 (0.49)		3.038 (0.52)		3.01 (0.49)		3.01 (0.50)	
range	1.70 – 3.89		2.00 – 4.00		2.00 – 3.70		2.00 – 3.84		1.70 – 4.0	
Employment Status										
Employed	10	37.0%	7	33.3%	11	44.0%	7	30.4%	35	36.5%
Unemployed	17	63.0%	14	66.7%	14	56.0%	16	69.9%	61	63.5%
Weekly Hours Worked										
mean (stdev)	8.50 (14.7)		8.33 (10.3)		10.89 (9.7)		7.90 (11.9)		8.89 (11.79)	
range	0 – 60		0 – 25		0 – 29		0 – 40		0 – 60	
Greek Affiliation										
Yes	10	37.0%	11	52.4%	4	16.0%	8	34.8%	33	34.4%
No	16	59.3%	9	42.9%	21	84.0%	15	65.2%	61	63.5%
Other	1	3.7%	1	4.7%	0	0.0%	0	0.0%	2	2.1%
Total	27		21		25		23		96	

Table 3.3

Baseline Assessment: Analyzed Sample (by experimental condition)

	1	2	3	4	Total
Total Drinks (Wed-Sun)					
mean (stdev)	33.32 (19.7)	33.87 (13.3)	25.79 (10.9)	33.22 (25.3)	31.45 (18.2)
range	12.0 – 112.0	18.7 – 75.0	7.0 – 47.0	16.5 – 140.1	7.0 – 140.1
AUDIT Total					
mean (stdev)	12.96 (5.3)	13.71 (3.6)	12.36 (4.8)	14.70 (4.4)	13.39 (4.6)
range	5 – 25	8 – 22	5 – 25	9 – 26	5 – 26
BYAACQ Total					
mean (stdev)	9.65 (4.3)	11.05 (4.2)	9.38 (4.3)	11.43 (4.4)	10.3 (4.3)
range	1 – 18	4 – 19	1 – 17	4 – 20	1 – 20
Total Alcohol Expenses					
mean (stdev)	766.5 (1398)	405.0 (301)	432.1 (392)	483.8 (541)	526.6 (803)
range	10 – 7000	20 – 1200	25 – 1500	15 – 2500	10 – 7000

Table 4.1

Baseline Assessment: Excluded Sample (by experimental condition)

	1		2		3		4		Total	
Gender										
Male	3	50.0%	2	28.6%	3	33.3%	3	33.3%	11	36.7%
Female	3	50.0%	5	71.4%	5	55.7%	6	66.7%	19	63.3%
Age in years										
mean (stdev)	20.1 (1.5)		19.6 (0.9)		19.9 (1.6)		20.3 (1.7)		19.96 (1.4)	
range	18 – 22		19 – 21		18 – 23		18 – 23		18 – 23	
Ethnicity										
European-American	6	100%	6	85.7%	8	100%	7	77.8%	27	90.0%
American-Indian	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Asian	0	0.0%	0	0.0%	0	0.0%	1	11.1%	1	3.3%
Bi-racial/Mixed	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Hispanic/Latino-a	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
African-American	0	0.0%	1	14.3%	0	0.0%	1	11.1%	2	6.7%
Relationship Status										
Single	4	66.7%	3	42.9%	5	55.6%	5	55.6%	17	56.7%
Committed Relationship	2	33.3%	2	28.6%	2	22.2%	4	44.4%	10	33.3%
Casual Dating	0	0.0%	2	28.6%	1	11.1%	0	0.0%	3	10.0%
Living Arrangements										
roommate	5	83.3%	6	85.7%	5	55.6%	8	88.9%	24	80.0%
live alone	1	16.7%	0	0.0%	2	22.2%	0	0.0%	3	10.0%
romantic partner	0	0.0%	1	14.3%	1	11.1%	1	11.1%	3	10.0%
other	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
parents/guardian	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Housing Arrangements										
Dormitory	1	16.7%	3	42.9%	4	44.4%	3	33.3%	11	36.7%
Off-Campus House	2	33.3%	1	14.3%	1	11.1%	2	22.2%	6	20.0%
Off-Campus Apt.	1	16.7%	1	14.3%	1	11.1%	1	11.1%	4	13.3%
Greek Housing	2	33.3%	2	28.6%	1	11.1%	2	22.2%	7	23.3%
Campus Apt.	0	0.0%	0	0.0%	1	11.1%	1	11.1%	2	6.7%
Total	6		7		8		9		30	

Table 4.2

Baseline Assessment: Excluded Sample (by experimental condition)

	1		2		3		4		Total	
Academic Standing										
Freshman	2	33.3%	4	57.1%	4	50.0%	3	33.3%	13	43.3%
Sophomore	1	16.7%	2	28.6%	2	25.0%	4	44.4%	9	30.0%
Junior	1	16.7%	1	14.3%	1	12.5%	1	11.1%	4	13.3%
Senior	2	33.3%	0	0.0%	1	12.5%	1	11.1%	4	13.3%
Other	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Credit Hours										
mean (stdev)	12.67 (2.66)		14.29 (1.98)		13.63 (3.07)		13.56 (1.51)		13.57 (2.29)	
range	9 – 17		12 – 17		7 – 16		12 – 16		7 – 17	
Estimated G.P.A.										
mean (stdev)	3.08 (0.53)		3.00 (0.53)		3.34 (0.39)		3.36 (0.45)		3.21 (0.47)	
range	2.50 – 3.90		2.00 – 3.72		3.00 – 3.90		2.80 – 4.00		2.00 – 4.00	
Employment Status										
Employed	2	33.3%	2	28.6%	3	37.5%	4	44.4%	11	36.7%
Unemployed	4	66.6%	5	71.4%	5	62.5%	5	55.6%	19	63.3%
Weekly Hours Worked										
mean (stdev)	8.75 (11.82)		3.33 (8.17)		4.17 (6.65)		15.0 (13.62)		7.73 (10.72)	
range	0 – 25		0 – 20		0 – 15		0 – 32		0 – 32	
Greek Affiliation										
Yes	2	33.3%	4	57.1%	2	25.0%	3	33.3%	11	36.7%
No	4	66.6%	3	42.9%	6	75.0%	6	66.7%	19	63.3%
Other	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Total	6		7		8		9		30	

Table 4.3

Baseline Assessment: Excluded Sample (by experimental condition)

	1	2	3	4	Total
Total Drinks (Wed-Sun)					
mean (stdev)	24.0 (13.5)	28.27 (18.5)	21.48 (8.5)	26.69 (18.1)	25.02 (14.6)
range	9.0 – 42.0	12.0 – 54.0	14.0 – 39.0	7.8 – 64.0	7.8 – 64.0
AUDIT Total					
mean (stdev)	12.50 (5.5)	15.17 (6.2)	13.38 (3.9)	11.13 (3.0)	12.93 (4.6)
range	6 – 20	8 – 23	10 – 20	9 – 18	6 – 23
BYAACQ Total					
mean (stdev)	8.60 (3.8)	11.8 3 (5.6)	9.25(3.0)	9.89 (3.7)	9.89 (3.9)
range	5 – 13	3 – 17	5 – 14	4 – 16	3 – 17
Total Alcohol Expenses					
mean (stdev)	213.8 (108)	238.5 (273)	185.0 (191)	268.1 (247)	258.1 (210)
range	55 – 300	20 – 750	80 – 700	0 – 750	0 – 750

Table 5.1

Randomization Check: Analyzed Sample (by experimental condition)

	1	2	3	4	Total	χ^2	$p \leq$
Gender							
Male	20	15	15	15	65	1.38	0.71
Female	7	6	10	8	31		
Ethnicity							
European-American	21	18	20	22	81	3.50	0.32
Non-European-American	6	3	5	1	15		
Relationship Status							
Single	14	12	12	15	53	4.82	0.57
Committed Relationship	6	5	10	4	25		
Casual Dating	7	4	3	4	18		
Living Arrangements							
roommate	21	19	18	19	77	7.58	0.58
live alone	3	0	5	4	12		
romantic partner	1	2	0	0	3		
other	1	0	2	0	3		
parents/guardian	1	0	0	0	1		
Housing Arrangements							
Dormitory	7	6	5	8	26	12.25	0.43
Off-Campus House	8	5	6	4	23		
Off-Campus Apt.	7	1	9	4	21		
Greek Housing	4	8	3	6	21		
Campus Apt.	1	1	2	1	5		
Academic Standing							
Freshman	12	14	6	12	44	14.66	0.26
Sophomore	5	4	9	6	24		
Junior	6	1	3	2	12		
Senior	4	2	6	3	15		
Employment Status							
Employed	10	7	11	7	35	1.07	0.785
Unemployed	17	14	14	16	61		
Greek Affiliation							
Yes	10	11	4	8	33	7.61	0.06*
No	16	9	21	15	61		
Total	27	21	25	23	96		

*significant at $\alpha = 0.10$ level

Table 5.2

Randomization Check: Analyzed Sample (by experimental condition)

	1	2	3	4	Total	*F*	$p \leq$
Age in years *M (SD*)	20.4 (1.4)	19.6 (1.4)	20.3 (1.2)	19.9 (1.6)	20.1 (1.4)	1.65	0.18
Credit Hours *M (SD*)	14.30 (3.98)	13.62 (4.75)	14.00 (1.92)	13.83 (7.15)	13.96 (2.07)	0.45	0.72
Estimated G.P.A. *M (SD*)	3.01 (0.54)	2.99 (0.49)	3.038 (0.52)	3.01 (0.49)	3.01 (0.50	0.27	0.99
Weekly Hours Worked *M (SD*)	8.50 (14.7)	8.33 (10.3)	10.89 (9.7)	7.90 (11.9)	8.89 (11.79)	0.23	0.88
Total Drinks *M (SD*)	33.32 (19.7)	33.87 (13.3)	25.79 (10.9)	33.22 (25.3)	31.45 (18.2)	0.96	0.42
AUDIT Total *M (SD*)	12.96 (5.3)	13.71 (3.6)	12.36 (4.8)	14.70 (4.4)	13.39 (4.6)	1.14	0.34
BYAACQ Total *M (SD*)	9.65 (4.3)	11.05 (4.2)	9.38 (4.3)	11.43 (4.4)	10.3 (4.3)	1.27	0.29
Total Alcohol Expenses *M (SD*)	766.5 (1398)	405.0 (301)	432.1 (392)	483.8 (541)	526.6 (803)	0.96	0.42

Table 6

Group Means of Total Self-Reported Drinking at One-Week Follow-up

	A *Self-Report*	*B* *Bracelet*	*C* *Collateral*	*D* *Combined*
M (SD)	21.83 (12.73)	22.27 (10.22)	14.17 (10.73)	20.36 (7.14)

Table 7

Tests of Between Groups Differences for Total Self-Reported Drinking at Followup

One-Way Analysis of Variance

Source of variance	*Sum of Squares*	*DF*	*Mean Squares*	*F*	$\alpha \leq$	η^2
Omnibous Test	1320.60	5	264.12	2.415	0.042*	0.121
Greek affiliation†	7.61	1	7.609	0.070	0.793	0.001
Baseline Drinking†	297.96	1	297.96	2.725	0.102	0.030
Bracelet	182.41	1	182.41	1.668	0.200	0.019
Collateral	312.52	1	312.52	2.858	0.094	0.031
Bracelet*Collateral	182.46	1	182.46	1.668	0.200	0.019
Error	9623.78	88	109.361			
Total	10944.38	94				

†co-varied due to significant differences between groups at baseline ($\alpha \leq 0.10$)
**significant at $\alpha \leq 0.05$ level*

Table 8.1

Assessment Context Questionnaire: Analyzed Sample (non-bracelet groups)

		1	3	Total	χ^2	$p \leq$
Would a bracelet that measures physiological functioning impact your physical activities while wearing the device?	Yes No	8 18	6 19	14 37	0.29	0.41
Would a bracelet that measures physiological functioning impact your alcohol consumption while wearing the device?	Yes No	7 20	4 20	11 40	0.64	0.32
Would a bracelet that measures physiological functioning impact the way you responded to questions about your alcohol consumption while wearing the device?	Yes No	5 22	2 23	7 45	1.23	0.24
Would a bracelet that measures your actual alcohol consumption have an impact on your drinking while wearing the device?	Yes No	12 15	4 21	16 36	4.93	0.026**
Would a bracelet that measures your actual alcohol consumption have an impact on the way you responded to questions about your drinking while wearing the device?	Yes No	6 21	3 22	9 43	0.95	0.27

Table 8.2

Assessment Context Questionnaire: Analyzed Sample (non-bracelet groups)

	1	3	Total	*F*	$p \leq$
How much would a collateral informant influence your alcohol consumption during the study?	1.78 (2.6)	0.64 (1.8)	1.23 (2.3)	3.27	0.08
How much would a collateral informant influence the way you responded to questions about your alcohol consumption while in the study?	2.41 (3.4)	0.12 (0.3)	1.31 (2.7)	11.13	0.002*

**significant at $\alpha = 0.05$ level*

Table 8.3

Assessment Context Questionnaire: Analyzed Sample (bracelet groups)

		2	4	Total	χ^2	$p \leq$
Did the bracelet have an impact on your physical activities while wearing the device?	Yes No	10 11	9 14	19 25	0.32	0.57
Did the bracelet have an impact on your alcohol consumption while wearing the device?	Yes No	2 19	2 21	4 40	0.01	0.66
Did the bracelet have an impact on the way you responded to questions about your alcohol consumption while wearing the device?	Yes No	2 19	3 20	5 39	0.14	0.55
Would a bracelet that measures your actual alcohol consumption have an impact on your drinking while wearing the device?	Yes No	6 15	6 17	12 32	0.03	0.56
Would a bracelet that measures your actual alcohol consumption have an impact on the way you responded to questions about your drinking while wearing the device?	Yes No	5 16	2 21	7 37	1.87	0.17

Table 8.4

Assessment Context Questionnaire: Analyzed Sample (bracelet groups)

	2	4	Total	*F*	$p \leq$
How much would a collateral informant influence your alcohol consumption during the study?	1.00 (1.9)	0.22 (0.6)	0.59 (1.5)	3.29	0.08
How much would a collateral informant influence the way you responded to questions about your alcohol consumption while in the study?	0.76 (1.8)	1.00 (2.3)	0.89 (2.0)	0.15	0.71

Table 8.5

Assessment Context Questionnaire: Analyzed Sample (non-collateral groups)

	1	2	Total	*F*	*p* ≤
How much would a bracelet that measures physiological functioning impact your physical activities while wearing the device?	2.44 (2.8)	2.62 (2.5)	2.52 (2.8)	0.05	0.83
How much would a bracelet that measures physiological functioning impact your alcohol consumption while wearing the device?	2.33 (2.9)	0.62 (1.8)	1.58 (2.6)	5.45	0.02*
How much would a bracelet that measures physiological functioning impact the way you responded to questions about your alcohol consumption while wearing the device?	2.11 (3.2)	0.57 (1.7)	1.44 (2.7)	4.02	0.05*
How much would a bracelet that measures your actual alcohol consumption have an impact on your drinking while wearing the device?	3.19 (3.3)	1.9 (2.5)	2.63 (3.0)	2.16	0.15
How much would a bracelet that measures your actual alcohol consumption have an impact on the way you responded to questions about your drinking while wearing the device?	1.81 (2.9)	1.81 (2.9)	1.81 (2.9)	0.00	0.99

Table 8.6

Assessment Context Questionnaire: Analyzed Sample (non-collateral groups)

		1	2	Total	χ^2	$p \leq$
Would a collateral informant influence your alcohol consumption during the study?	Yes	7	3	10	0.97	0.27
	No	20	18	38		
Would a collateral informant influence the way you responded to questions about your alcohol consumption while in the study?	Yes	6	2	8	1.22	0.24
	No	21	18	39		

Table 8.7

Assessment Context Questionnaire: Analyzed Sample (collateral groups)

	3	4	Total	*F*	$p \leq$
How much would a bracelet that measures physiological functioning impact your physical activities while wearing the device?	2.24 (3.1)	2.74 (2.0)	2.48 (2.6)	0.44	0.51
How much would a bracelet that measures physiological functioning impact your alcohol consumption while wearing the device?	1.56 (2.6)	0.74 (1.7)	1.17 (2.2)	1.67	0.20
How much would a bracelet that measures physiological functioning impact the way you responded to questions about your alcohol consumption while wearing the device?	0.52 (1.2)	1.22 (2.1)	0.85 (1.7)	1.97	0.17
How much would a bracelet that measures your actual alcohol consumption have an impact on your drinking while wearing the device?	1.36 (2.3)	1.30 (2.0)	1.33 (2.2)	0.01	0.93
How much would a bracelet that measures your actual alcohol consumption have an impact on the way you responded to questions about your drinking while wearing the device?	0.68 (1.6)	0.83 (1.6)	0.75 (1.6)	0.10	0.75

Table 8.8

Assessment Context Questionnaire: Analyzed Sample (collateral groups)

		3	4	Total	χ^2	$p \leq$
Did the presence of the collateral informant influence your alcohol consumption during the study?	Yes No	2 23	1 22	3 45	0.273	.060
Did the presence of the collateral informant influence the way you responded to questions about your alcohol consumption while in the study?	Yes No	0 25	4 19	4 44	4.74	0.05*

**significant at α = 0.05 level*

Appendix B

Figures

Figure 1

Diagram of Participant Enrollment and Participation

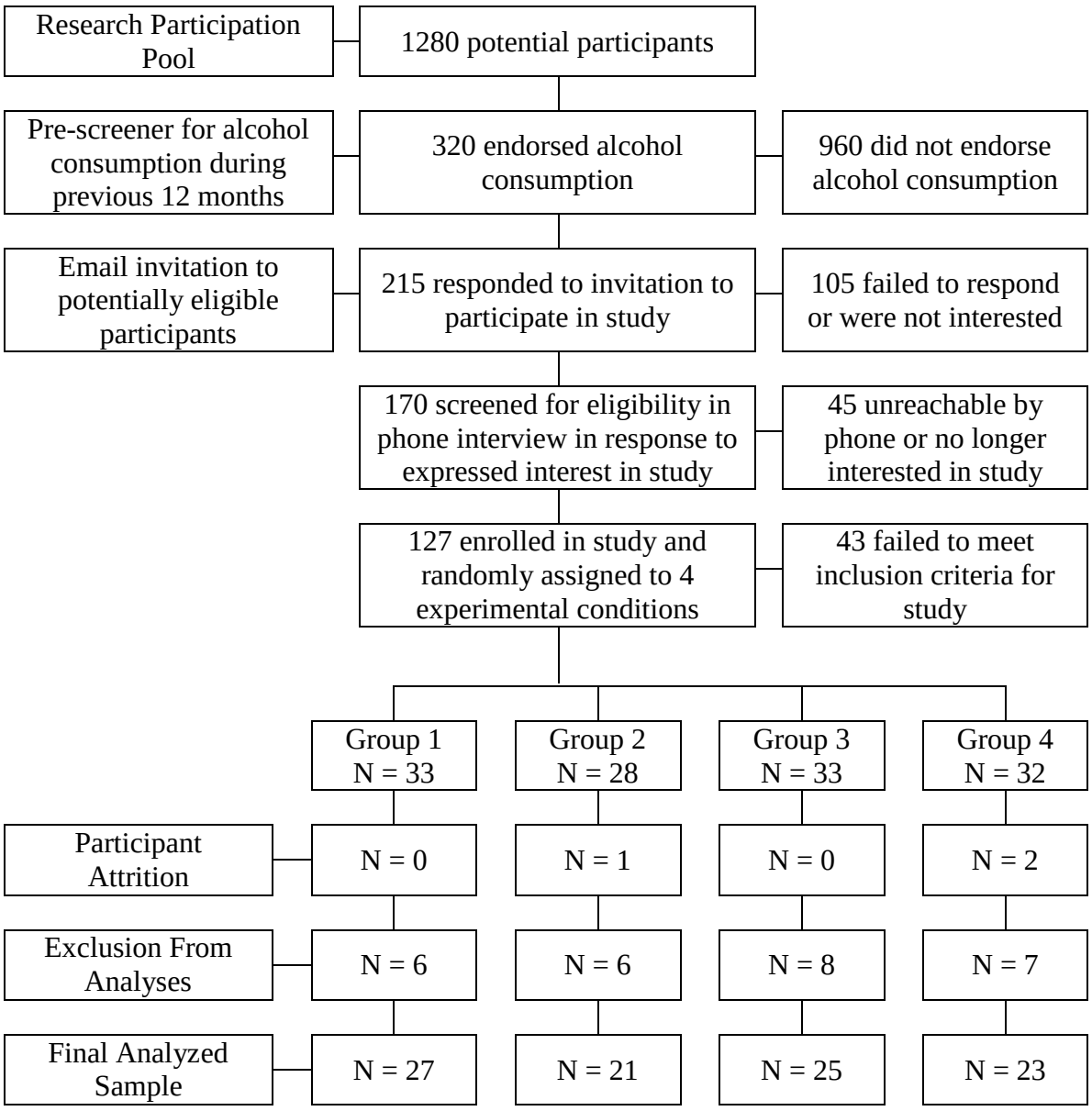


Figure 2

Secure Continuous Remote Alcohol Monitor (SCRAM)
by Alcohol Monitoring Systems, Inc.

Figure 3

Alco-Sensor FST (breath-alcohol analyzer) by Intoximeters, Inc.

Figure 4

Standard Drink Calculator

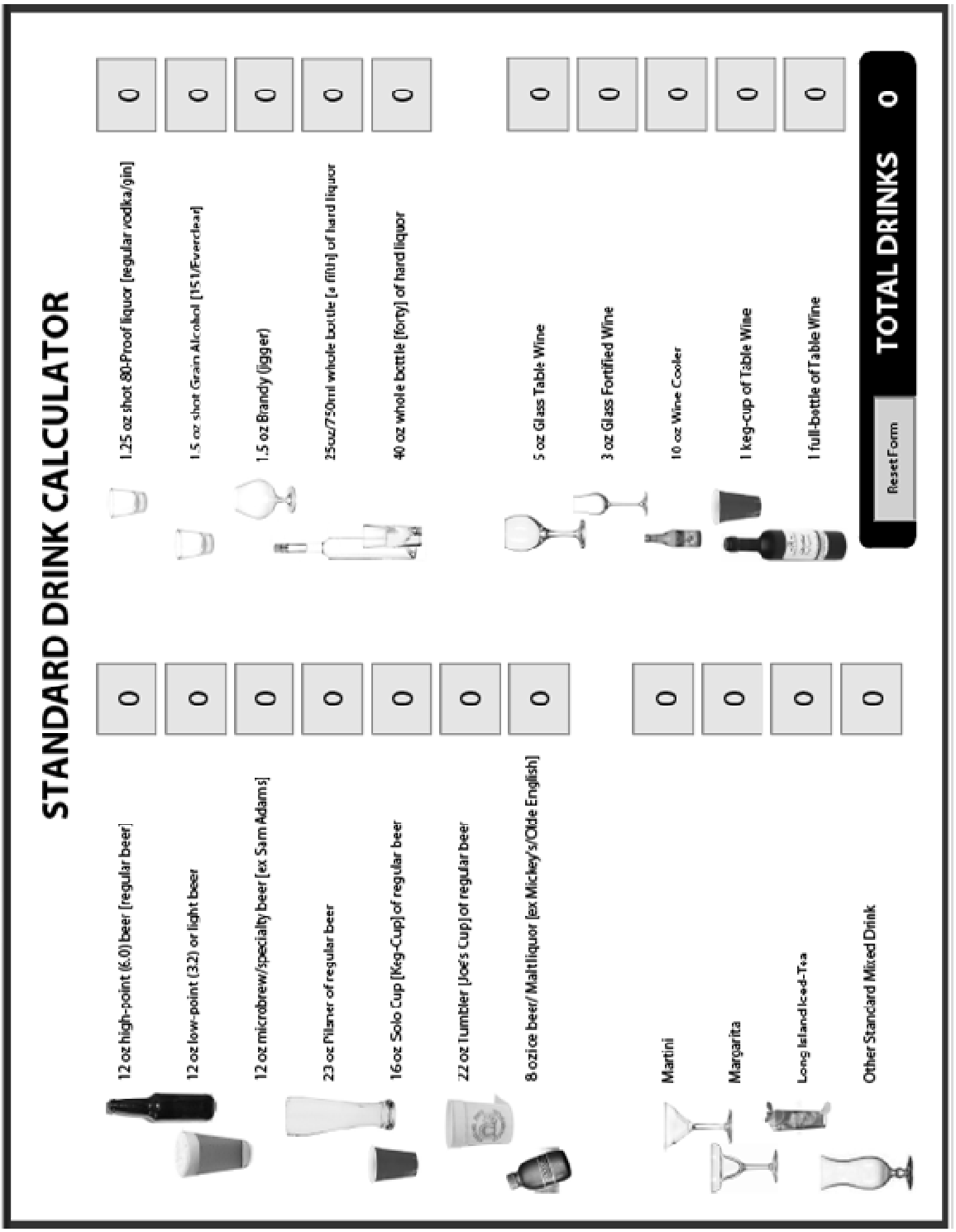


Figure 5

Participant ID Card and SCRAM Sticker

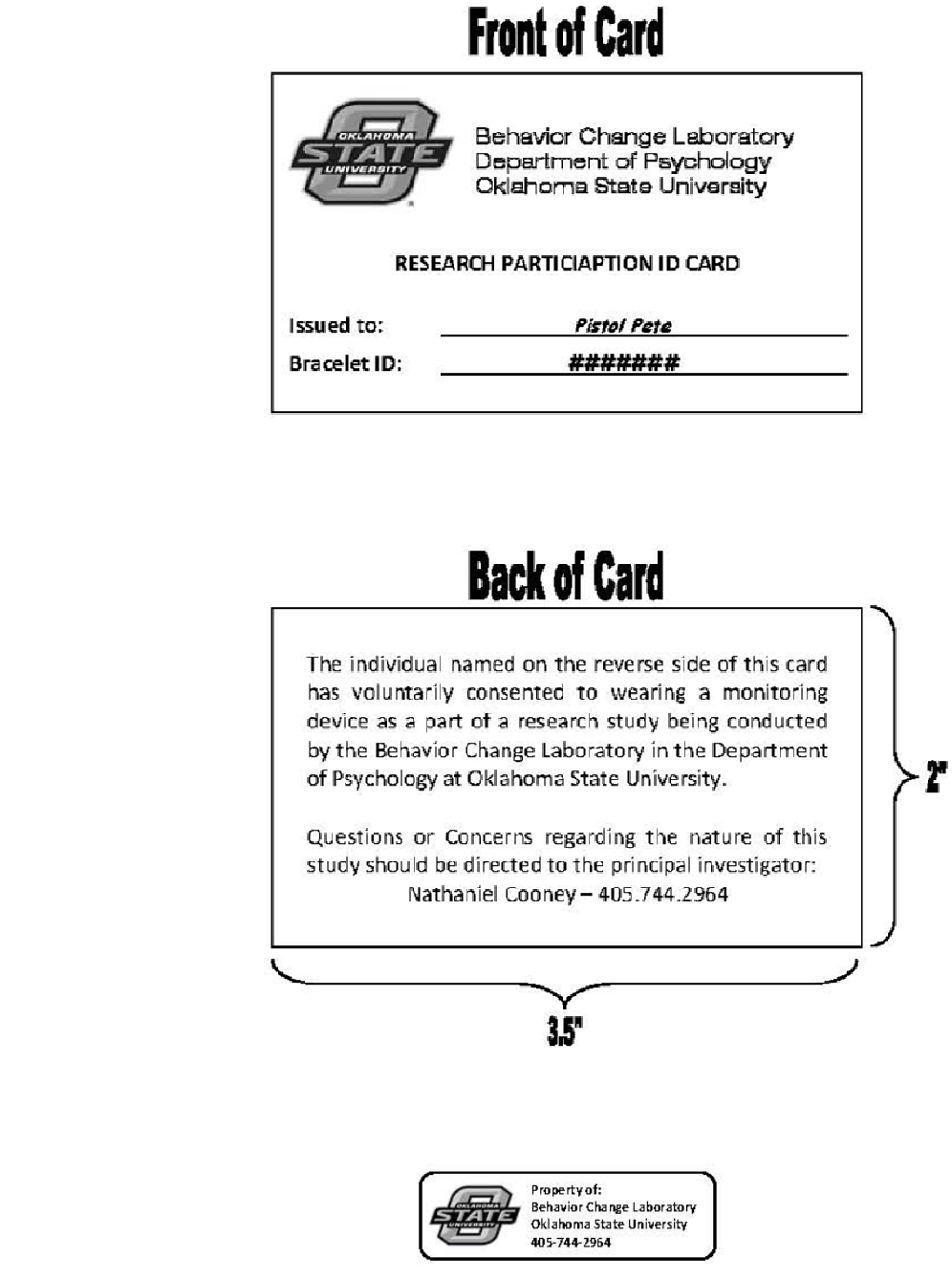
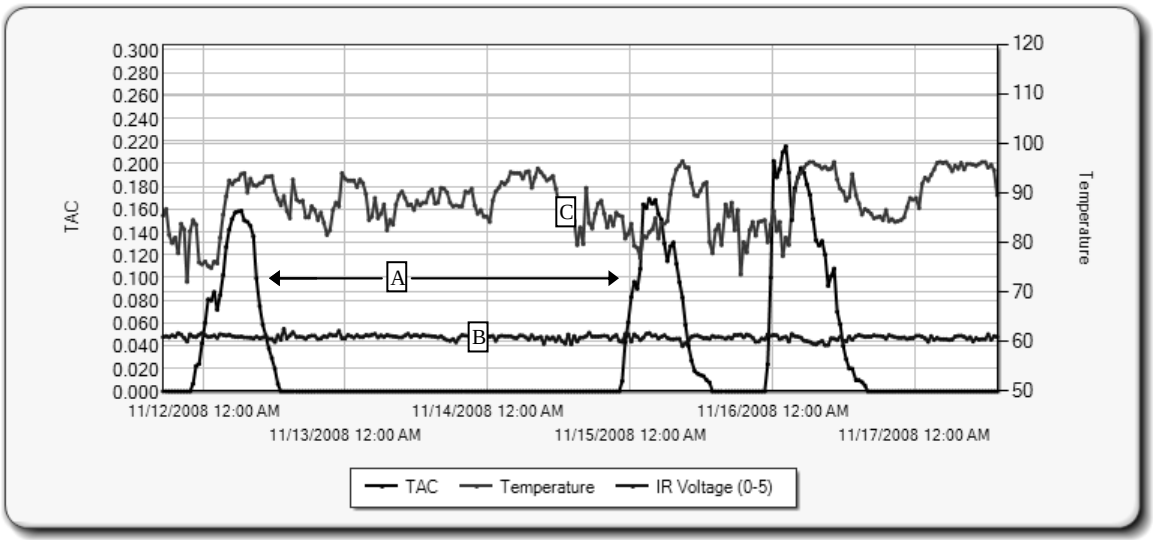


Figure 6

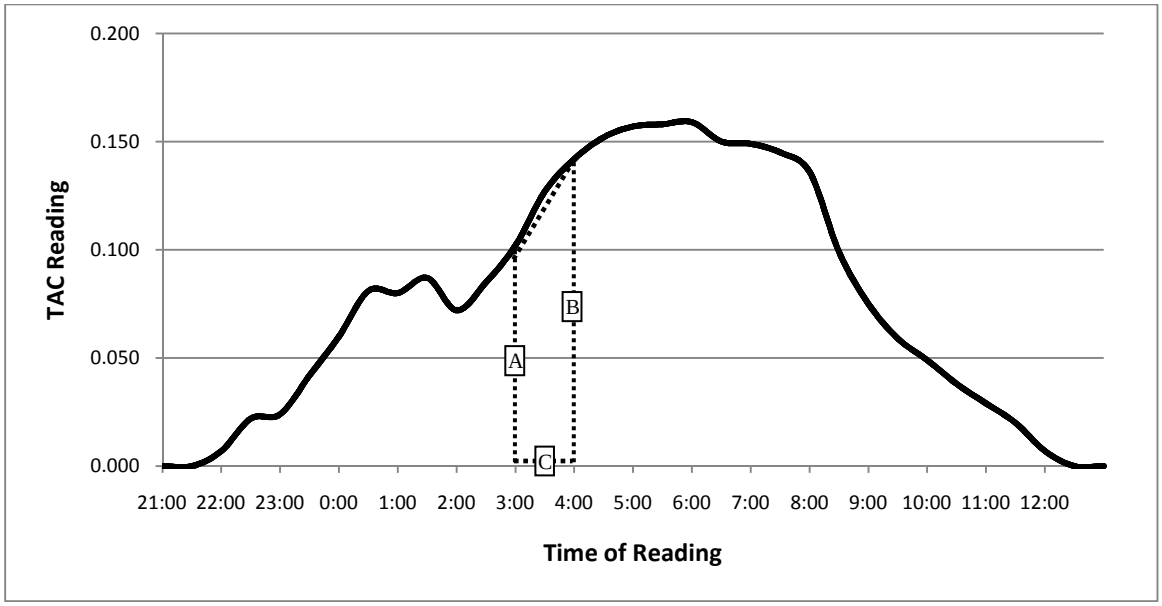
Sample SCRAM graphical output



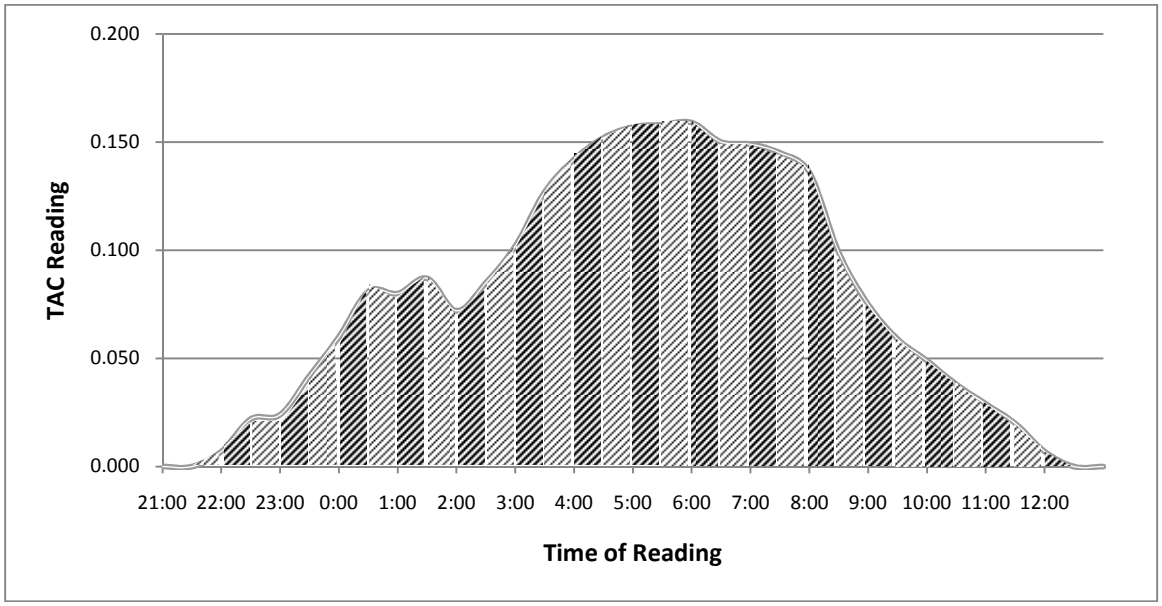
A typical SCRAM graphical output provides four pieces of data. The first two are TAC readings (y-axis, left) as a function of their respective timings (x-axis). These create the characteristic drinking curves (labeled "A" above). The third and forth pieces of data provided in the output are indicators of bracelet tampering. The first of these (labeled "B" above) is a voltage reading of the infrared reflectivity of the skin (indicating any obstructions between the alcohol sensor and the skin). The other (labeled "C" above) is a reading of the skin temperature (y-axis, right), taken concurrently with each TAC reading. Using these pieces of data, one can observe in the figure above three confirmed drinking events and no apparent equipment tampers by the bracelet wearer.

Figure 7

Calculating the area under the alcohol curve



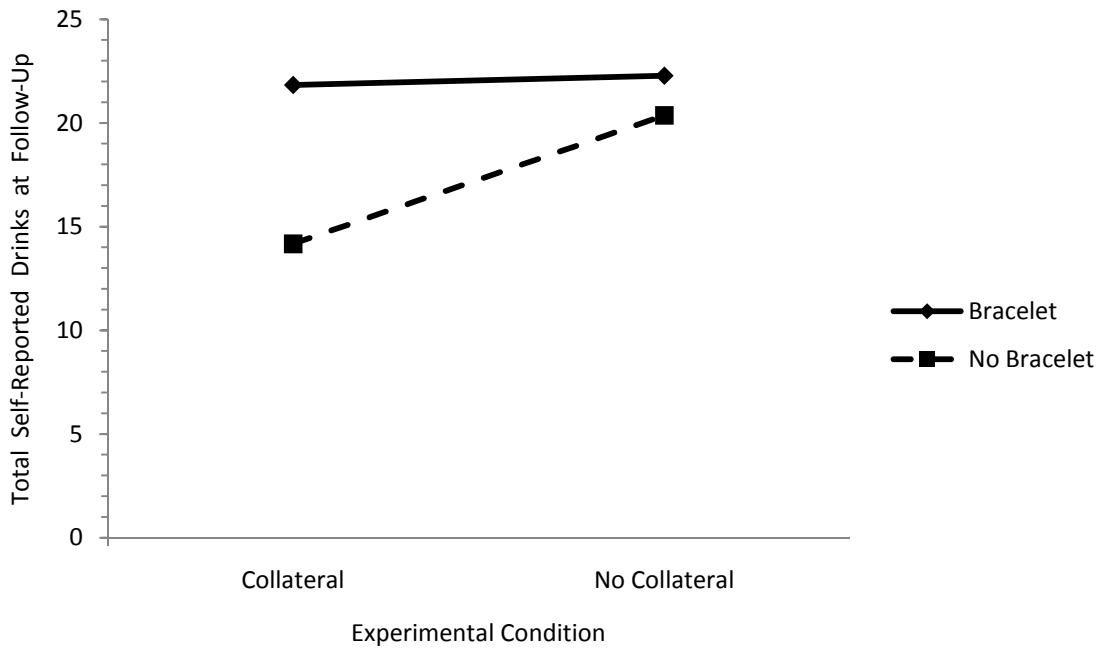
*The alcohol curve is created by a collection of TAC readings plotted against their respective timings. Consecutive readings create trapezoids from which areas can be calculated using the formula [(A+B)/2]*C.*



Total area under the alcohol curve (TAUC) can be approximated by summing the areas of the trapezoids created by the data points associated with adjacent non-zero TAC readings.

Figure 8

Group Means of Total Self-Reported Drinking at One-Week Follow-up



Appendix C
Institutional Review Board Approval Letter

Oklahoma State University Institutional Review Board

Date:	Thursday, October 02, 2008
IRB Application	AS0860
Proposal Title:	Evaluating the Methodology in College Alcohol Research
Reviewed and Processed as:	Full Board

Status Recommended by Reviewer(s): Approved

Approval Date: 9/10/2008 **Protocol Expires: 9/9/2009**

Principal Investigator(s):

Nathaniel J. Cooney
2717 N. Park Dr.
Stillwater, OK 74075

Thad Leffingwell
405 N. Murray
Stillwater, OK 74078

The IRB application referenced above has been approved. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in section 45 CFR 46.

The final versions of any printed recruitment, consent and assent documents bearing the IRB approval stamp are attached to this letter. These are the versions that must be used during the study.

As Principal Investigator, it is your responsibility to do the following:

1. Conduct this study exactly as it has been approved. Any modifications to the research protocol must be submitted with the appropriate signatures for IRB approval.
2. Submit a request for continuation if the study extends beyond the approval period of one calendar year. This continuation must receive IRB review and approval before the research can continue.
3. Report any adverse events to the IRB Chair promptly. Adverse events are those which are unanticipated and impact the subjects during the course of this research; and
4. Notify the IRB office in writing when your research project is complete.

Please note that approved protocols are subject to monitoring by the IRB and that the IRB office has the authority to inspect research records associated with this protocol at any time. If you have questions about the IRB procedures or need any assistance from the Board, please contact Beth McTernan in 219 Cordell North (phone: 405-744-5700, beth.mcternan@okstate.edu).

Sincerely,

Shelia Kennison, Chair
Institutional Review Board

Appendix D1

Informed Consent (Participant Version) – page 1

Informed Consent for Research Participation (Participant Version)
Evaluating the Methodology in College Research

PLEASE READ THIS ENTIRE DOCUMENT CAREFULLY. AFTER READING, INITIAL EACH LINE AND AFFIX YOUR SIGNATURE/DATE AT THE END OF THE DOCUMENT INDICATING YOUR CONSENT TO PARTICIPATE IN THIS STUDY.

_____ What is the project? Who is responsible for the project?
This project is designed to investigate the methods used in college alcohol research. The project is titled: "Evaluating the Methodology in College Research" and is being conducted by Nathaniel John Cooney, B.S. (graduate student) and Thad R. Leffingwell, Ph.D. (Associate Professor) in the Department of Psychology at Oklahoma State University. This project has been approved by OSU's Institutional Review Board (IRB).

_____ Why might I be asked to participate?
You have been invited to participate because you are currently a college student between 18 and 24 years of age, and because you indicated on a screening questionnaire/interview at least one occasion of high-risk alcohol consumption during the last 30 days.

_____ What might I be asked to do?
Participants will be asked to be involved in the study for approximately two weeks. This involvement would include completing questionnaires in the laboratory for about 30-45 minutes on two separate occasions (at the beginning and end of the first week) and filling out a questionnaire online (approximately 20-30 minutes) at the end of the second week. Questionnaires will ask participants primarily to respond to questions related to their personal alcohol use and related behaviors. In some cases participants may also be asked to provide a second person who can also answer questions about their alcohol use, and/or to wear a small electronic monitoring device throughout the first week of the study. **All participants are consenting to all of these possibilities, regardless of whether or not they will actually experience them during the study.*

_____ What are the risks of participating in this project?
Some people may experience some discomfort when responding to sensitive questions about their use of alcohol or related consequences. Participation in this study may also cause some people to reflect on important life choices and experiences, and information about professional services available to you on-campus and in the community will be made available to you upon request. Individuals who are asked to wear an electronic monitoring device may experience some minor discomfort including mild rash or bruising, or minor inconvenience to normal activities such as sleeping and prohibitions against swimming or bathing (showering ok). Participants who experience significant discomfort may call 405-338-8268 to arrange for removal of the device. In addition, the monitoring devices used in this study utilize similar technology as that often used in legal settings (and is similar in shape and size to bracelets that are sometimes worn by criminal offenders on probation). There is a small possibility that an individual wearing a monitor for the study may be mistaken by law enforcement officials as an offender and participants should be aware that officials may engage them because of the presence of the monitoring device. To minimize this risk, local law enforcement agencies have been notified of the study, and participants will be issued "Participant ID Cards" to identify them as research participants and not offenders. Participants may wish to further protect against this risk by taking steps to conceal the bracelet (such as wearing long pants that cover the unit while participating in the study). Participation in this study requires that some information be collected about behavior that may be illegal (e.g., drinking alcohol under age). Thus, there is some small risk that this data may be ordered released by a judge.

_____ What about my privacy and confidentiality?
Participation in this study will require you to share some information that you may consider quite private and sensitive. All records from this study will be kept confidential to the extent allowable by law, and several measures will be taken to minimize the likelihood that this confidentiality will be compromised. Computerized data will be maintained on a password-protected computer in a password-protected file accessible only by members of the research team. Data from the electronic monitors is transmitted to a computer server for processing, but the data is carefully protected against piracy and is accessible only via a secure server, requiring log-in. Data for this study will be kept for three years and then will be destroyed. Results of this study will be reported collectively. In other words, no individual data will be reported. It is possible that the consent processes and data collection will be observed by research oversight staff responsible for safeguarding the rights and wellbeing of people who participate in research.

In addition to the safeguards mentioned above, this study has also applied for a Certificate of Confidentiality from the National Institute of Health. If awarded, this certificate will protect researchers from being forced to disclose information that may identify you, even by a court subpoena, in any federal, state, or local civil, criminal, administrative, legislative, or other proceedings. The researchers will use the Certificate to resist any demands for information that would identify you, except as explained below. The Certificate cannot be used to resist a demand for information from personnel of the United States Government that is used for auditing or evaluation of Federally funded projects or for information that must be disclosed in order to meet the requirements of the federal Food and Drug Administration (FDA). The Certificate of Confidentiality does not

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prevent the researchers from disclosing voluntarily, without your consent, information that would identify you as a participant in the research project in the event that the researcher believes you are in danger of causing harm to yourself or to others; or in cases where abuse or neglect of minors, elderly, disabled, or otherwise vulnerable populations is evident. You should understand that a Certificate of Confidentiality does not prevent you or a member of your family from voluntarily releasing information about yourself or your involvement in this research. If an insurer, employer, or other person obtains your written consent to receive research information, then the researchers may not use the Certificate to withhold that information.

_____ How will I be compensated for participating?
All participants will receive three units of SONA research credit for your participation in the two lab sessions and the online follow-up questionnaire. Some participants who have been randomly selected for additional components of the study may also be eligible for monetary compensation in the amount of $25 (in addition to the research credits).

_____ What are the benefits of participating?
In addition to the compensation you will receive, many participants learn important information about themselves and their drinking behavior as a result of their involvement in research that may help them to make decisions that reduce their risk for alcohol-related consequences. All participants will be offered a brochure(s) with information about alcohol use and referral sources should you wish to seek professional assistance for your drinking behavior. In addition, the information you will provide will contribute to a greater understanding of alcohol use among college students, and may provide valuable benefits to society at large.

_____ What are the alternatives?
The alternative is to not participate. Your participation is completely voluntary. There is no penalty for choosing to not participate. If you are eligible for research credit in a course due to your participation, the instructor of that course will make comparable options available to you. You may choose to not participate now, or at any time during your participation. Participation in this study should NOT be viewed as a substitute for professional evaluation or treatment of problems related to alcohol or substance use or mental or physical health.

_____ What if I have other questions or concerns about my participation?
If you have any questions or need to report an effect about the research procedures, you may contact Thad R. Leffingwell, PhD at 405-744-7494 or 116 N. Murray Hall, Stillwater, Oklahoma 74078. If you have questions about your rights as a research participant, you may take them to Shelia Kennison, Ph.D., Chair of OSU's Institutional Review Board at 405-744-1676 or 219 Cordell North, Stillwater, Oklahoma, 74078.

STATEMENT OF VOLUNTARY PARTICIPATION
I understand that my participation is voluntary and that I will not be penalized if I choose not to participate. I also understand that I am free to withdraw my consent at any time and my participation in this project without penalty. If I choose to withdraw from participation in this study, I understand that it is my responsibility to notify a member of the research team in a timely manner.

SIGNATURES
"I have read and understand the consent form. I have had a chance to ask questions about the study and my questions have been answered to my satisfaction. I sign this form freely and voluntarily. A copy of this form has been given to me."

_____ Name (please print)

_____ Date

_____ Signature

_____ Time

"I certify that I have personally explained all elements of this form to the participant before requesting the participant to sign it."

_____ Project director or authorized representative

_____ Date

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Appendix D2

Participant Agreement (Bracelet) – page 1

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PARTICIPANT AGREEMENT (BRACELET)
Evaluating the Methodology in College Alcohol Research

PLEASE READ THIS ENTIRE DOCUMENT CAREFULLY. AFTER READING, INITIAL EACH LINE AND AFFIX YOUR SIGNATURE/DATE AT THE END OF THE DOCUMENT INDICATING YOUR AGREEMENT TO THE CONDITIONS OUTLINED IN THIS DOCUMENT.

I, _____, have been assigned an electronic monitoring device as a part of my voluntary participation in a research study for the Behavior Change Laboratory in the Department of Psychology at Oklahoma State University. I agree to comply with all study requirements set forth in this agreement and to strictly follow the instructions of the staff of the Behavior Change Laboratory. I agree to properly use the equipment provided to me. I will wear the monitoring device (bracelet) on my ankle for the duration of the study. I understand that the bracelet will, at pre-programmed intervals, take physiological readings (as well as readings that indicate interference or tampering) that will be stored and downloaded from the device at the conclusion of the study.

_____ Receipt of device
I acknowledge receipt of bracelet # _____

_____ Routine Behaviors
I understand that as a participant in the study that I am to engage in my normal daily behaviors, and will not deviate from these behaviors (to the extent possible, unless otherwise required by this agreement) while wearing this device.

_____ Restrictions to Water Activities
I understand that I am not to submerge the bracelet under water. Showering is the only permissible form or bathing (activities such as swimming / bathing are prohibited while wearing the device).

_____ Banned Products
I understand that I am not to use any product containing alcohol on or near the bracelet or skin around the bracelet, including, but not limited to: medicinal alcohol, household cleaners and disinfectants, lotions, body washes, perfumes, colognes, or other hygiene products that contain alcohol. No products other than soap and water should be used on the skin around the bracelet.

_____ Personal Hygiene
I agree that when showering, I will thoroughly clean the area around the bracelet with soap and water. I will thoroughly rinse with clean water and dry underneath the Bracelet. I understand that failure to rinse away all soap and dry the area around the bracelet may result in a mild skin rash.

_____ Current Status or Pre-Existing Medical Conditions
I agree that I will reveal my current health status to lab personnel and will also notify them of any pre-existing medical conditions that I am aware of such as pregnancy, diabetes or any type of known skin disorder or condition that may affect my ability to fully participate in this study.

_____ Removal of Device
I understand that this device may only be removed in the Behavior Change Laboratory by authorized, trained personnel. I understand that I may contact lab personnel to have the device adjusted for comfort or fit, or removed at any time during the study, if necessary. If the device must be removed outside the laboratory in an emergency situation, I understand that it must be removed by cutting the rubber strap ONLY, and that it is my responsibility to notify the lab personnel at the earliest opportunity of the bracelet's removal.

_____ Intentional Misuse of Device
I understand that I am not to attempt to remove or tamper with the bracelet in any way, or to place any obstruction between the bracelet and my leg, except in emergency situations; and that any evidence of intentional tampering or damage to the unit (as well as any evidence of misuse of the bracelet as outlined in this agreement) may result in my immediate termination from the study.

_____ Lab Notification
I understand that it is my responsibility to notify the lab personnel at the earliest possible opportunity of any damage that may have occurred to the bracelet while the unit is in my possession.

Participant Agreement (Bracelet) – page 2

_____ Possible Risks

I understand that it is possible that I may encounter some risks by wearing this device. These risks include the potential for some mild discomfort as well as the possibility of skin irritation (that may include bruising, a burning sensation, or rash). **I understand that if I experience any significant discomfort or any other apparent health risk from wearing the bracelet, I will notify lab personnel immediately. If I must remove the Bracelet for health risks, I will cut ONLY the rubber strap to do so, and will inform the lab personnel of the bracelet's removal and arrange for its return.**

_____ Compensation

I understand that in exchange for my participation in this study, I will receive monetary compensation in the amount of $25 (provided I have made my best effort to adhere to the terms of this agreement), in addition to the SONA research credits that will be awarded for my completion of other aspects of the study. I understand that a member of the laboratory personnel will contact me after the study has concluded to arrange a time for the payment to be processed.

SIGNATURES

"I have read and understand this agreement. I have had a chance to ask questions about the study and my questions have been answered to my satisfaction. I sign this form freely and voluntarily. A copy of this form has been given to me."

_____ _____

Name (please print) Date

_____ _____

Signature Time

"I certify that I have personally explained all elements of this form to the participant before requesting the participant to sign it."

_____ _____

Project director or authorized representative Date

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Appendix D3

Participant Agreement (Collateral) – page 1

PARTICIPANT AGREEMENT (COLLATERAL)
Evaluating the Methodology in College Alcohol Research

PLEASE READ THIS ENTIRE DOCUMENT CAREFULLY. AFTER READING, INITIAL EACH LINE AND AFFIX YOUR SIGNATURE/DATE AT THE END OF THE DOCUMENT INDICATING YOUR AGREEMENT TO THE CONDITIONS OUTLINED IN THIS DOCUMENT.

_____ Voluntary Participation
I understand that as a condition of my participation in this study, I have been asked to invite another individual (close friend or relative) of my choosing to participate in this study along with me. I offer this information freely and consent to having this individual respond to questions about me as they relate to this study.

_____ Type of Information to be collected
I understand that the function of this other individual will be to provide information they may have related to my typical and specific behaviors related to alcohol consumption. I further understand that any information provided by this individual will be used for research purposes ONLY and will be maintained securely (to the extent possible) in the laboratory facility (as outlined in the consent document)

_____ Consent of Individual
I understand that the individual who I invite to participate in this study is guaranteed all of the same personal rights as all human subjects in research studies, including but not limited to her/his informed consent to participate. (I understand that this individual's participation is also voluntary and s/he may withdraw her/his consent at any time).

_____ Confidentiality
I understand that the privacy and confidentiality of this individual, and any information s/he may provide will be protected to the extent possible, and that same protections that are in place for my own information will be extended to any information provided by this individual as well (see informed consent for specific measures taken to protect confidentiality). I further understand that the laboratory personnel will not share any information with me that may be provided by this individual, without the individual's expressed written consent (I understand that this individual is free to share this information with me directly if s/he chooses to do so).

_____ Cooperation with Research Team
I understand that it is my responsibility to notify the individual of my choosing that a member of the research team will be contacting them regarding her/his possible participation in this study. I further understand that it is my responsibility to assist the research team in finding/scheduling another individual (if a previously contacted individual chooses not to participate).

_____ Agreement to limit communication during completion of questionnaire
I understand that during the actual time that this individual is completing questionnaires in the laboratory I am not to engage in direct or indirect communication with the individual regarding my alcohol consumption (but may do so freely before or after the questionnaires are completed).

_____ Compensation
I understand that the individual that assists me in this study will receive monetary compensation in the amount of $25 (to be paid directly to the individual at a time to be determined by the Behavior Change Laboratory).

_____ Permission to Share Consent Information
I give limited permission to personnel of the Behavior Change Laboratory to allow THIS DOCUMENT ONLY to be viewed by the individual that I invite to the study, ONLY IF NECESSARY to confirm that I have voluntarily consented to her/his involvement in the study.

Participant Agreement (Collateral) – page 2

SIGNATURES

"I have read and understand this agreement. I have had a chance to ask questions about the study and my questions have been answered to my satisfaction. I sign this form freely and voluntarily. A copy of this form has been given to me."

Name (please print)	Date
Signature	Time

"I certify that I have personally explained all elements of this form to the participant before requesting the participant to sign it."

Project director or authorized representative	Date

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Appendix D4

Informed Consent (Collateral Version) – page 1

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Informed Consent for Research Participation (Collateral Version)
Evaluating the Methodology in College Alcohol Research

PLEASE READ THIS ENTIRE DOCUMENT CAREFULLY. AFTER READING, INITIAL EACH LINE AND AFFIX YOUR SIGNATURE/DATE AT THE END OF THE DOCUMENT INDICATING YOUR CONENT TO PARTICIPATE IN THIS STUDY.

_____ What is the project? Who is responsible for the project?
This project is designed to investigate the methods used in college alcohol research. The project is titled: "Evaluating the Methodology in College Alcohol Research" and is being conducted by Nathaniel John Cooney, B.S. (graduate student) and Thad R. Leffingwell, Ph.D. (Associate Professor) in the Department of Psychology at Oklahoma State University. This project has been approved by OSU's Institutional Review Board (IRB).

_____ Why might I be asked to participate?
You have been invited to participate because you have a close friend or relative who is participating in this study who has requested your involvement.

_____ What are the risks of participating in this project?
There are no known risks to you for your participation in this study, though it is possible that some people may experience some discomfort when responding to questions they may consider private or sensitive. You will be asked to provide sensitive information about another individual, her/his alcohol use, and related consequences. This information is being collected for research purposes only, and confidentiality will be protected to the extent possible (see below). The other individual for whom you will be providing a report is fully aware of your involvement in this study, and has consented to your participation.

_____ What about my privacy and confidentiality?
Participation in this study will require you to share some information that you may consider quite private and sensitive. All records from this study will be kept confidential to the extent allowable by law, and several measures will be taken to minimize the likelihood that this confidentiality will be compromised. Computerized data will be maintained on a password-protected computer in a password-protected file accessible only by members of the research team. Data for this study will be kept for three years and then will be destroyed. Results of this study will be reported collectively. In other words, no individual data will be reported. It is possible that the consent processes and data collection will be observed by research oversight staff responsible for safeguarding the rights and wellbeing of people who participate in research.

_____ What are the benefits of participating?
If you choose to participate in this study, you will receive monetary compensation in the amount of $25. Some participants also find that they learn new information about themselves and about alcohol use in general as a result of their participation in research studies. All participants will be offered brochures about alcohol use and related treatment services.

_____ What are the alternatives?
The alternative is to not participate. Your participation is completely voluntary. There is no penalty for choosing to not participate. You may choose to not participate now, or at any time during your participation.

_____ What if I have other questions or concerns about my participation?
If you have any questions or need to report an effect about the research procedures, you may contact Thad R. Leffingwell, PhD at 405-744-7494 or 116 N. Murray Hall, Stillwater, Oklahoma 74078. If you have questions about your rights as a research participant, you may take them to Shelia Kennison, Ph.D., Chair of OSU's Institutional Review Board at 405-744-1676 or 219 Cordell North, Stillwater, Oklahoma, 74078.

STATEMENT OF VOLUNTARY PARTICIPATION
I understand that my participation is voluntary and that I will not be penalized if I choose not to participate. I also understand that I am free to withdraw my consent at any time and my participation in this project without penalty. If I choose to withdraw from participation in this study, I understand that it is my responsibility to notify a member of the research team in a timely manner.

Informed Consent (Collateral Version) – page 2

SIGNATURES

"I have read and understand the consent form. I have had a chance to ask questions about the study and my questions have been answered to my satisfaction. I sign this form freely and voluntarily. A copy of this form has been given to me."

Name (please print)	Date
Signature	Time

"I certify that I have personally explained all elements of this form to the participant before requesting the participant to sign it."

Project director or authorized representative	Date

Okla. State Univ.
IRB
Approved 9/10/08
Expires 9/9/09
IRB # HS-08-60

Appendix E

Active Deception Script

ACTIVE DECEPTION SCRIPT

If participant asks/suggests knowledge that the bracelet is like the ones worn by offenders

Our bracelets are very similar to those worn by criminal offenders who may be on probation or under house arrest.

If participant questions the bracelet's functionality or suggests a connection to SCRAM or Alcohol...

Our bracelets use "similar technology" to those you may have seen or heard of in legal settings or in the media, but ours will be collecting physiological data like skin temperature, sweat, heart rate, and breathing rate.

If they ask why we need a bracelet to measure these variables...

The advantage of the bracelet is it takes readings all throughout the day/evening. This way it will collect data automatically throughout the week, instead of making you come into the lab several times a day to measure your temperature/heart rate/etc.

If participant asks how these bracelets relate to the questions they are asked about alcohol...

We are interested in learning more about the relationship between alcohol consumption and these physiological measures. For example, if you told us that you drank alcohol on Friday, we would want to look at the bracelet to see if it noticed any changes in your heart rate or skin temperature when you were drinking as opposed to when you were not.

Only if the participant continues to press for information about the bracelet and alcohol, then the researcher should respond with a direct statement that the bracelets used in this study will NOT be measuring alcohol consumption.

If participant appears to persist in the belief that bracelet is related to alcohol/scram, please make a note of this and stick it in the participant folder so we can explore this in data analysis.

Appendix F

Participant Debriefing

Okla. State Univ.
IRB
Approved 9/10/08
Expires 9/9/09
IRB # AS-08-160

PARTICIPANT DEBRIEFING
IMPORTANT INFORMATION REGARDING YOUR PARTICIPATION IN THIS STUDY

We would like to again thank you for your participation in our study. Now that the study has concluded, we would like to provide you with some additional information that you may not have been given at the time of your participation. We encourage you to read this handout carefully, and to speak with a member of the research team if you have any questions.

Purpose of the study
The purpose of this study was to evaluate research methods used in measuring alcohol consumption among college students. During the assessment you were asked to complete self-report measures. You may have also been asked to wear an ankle bracelet, or to have a friend or relative come-in to complete measures, or both. The purpose of these different procedures was so that these factors could be compared to determine if they had any influence on participants' overall self-reported alcohol consumption.

Information about the ankle bracelet
The bracelet you wore in this study is called a SCRAM (Secure Continuous Remote Alcohol Monitor). This is a device which takes random measurements of the concentration of alcohol in your sweat (in much the same way a breathalyzer measures alcohol concentration in your breath).

Why wasn't I told about the real function of the bracelet before now?
It was important that participants provide 'normal' responses in their self-reports. Some participants might have responded differently (consciously or unconsciously), if they knew the true function of the SCRAM bracelet. If this happened, it could have potentially invalidated the results of the study.

What about my personal rights as a research participant?
We keep participant rights at the forefront of our considerations when constructing any study. Deception is used only when it is absolutely necessary, and every effort is taken to minimize the extent of the deception as well as any potential risks that may be associated with it. To help ensure adherence to ethical standards, this study has been carefully reviewed and approved by the Institutional Review Board, an independent body charged with the protection of rights of all human research subjects at OSU.

What about my confidentiality?
The same protections that are in-place for your questionnaires are also in-place for the SCRAM data as well. Your name has been kept separate from all of these data, all of which have been carefully maintained in a secure and locked facility.

I understand the rationale, but was it all really necessary?
This is one of the first studies to systematically explore alcohol research methods in this way, and also one of the first to use SCRAM bracelets for research purposes. The methods used were an important and necessary next step in alcohol research. Your participation was key to the success of this project, and may help to benefit other college students and additional alcohol research projects in the future.

What if I still have questions or concerns about this study?
We want every research participant to be re-assured about their involvement in our studies. If you have questions or concerns, we encourage you to contact the research team at 405-744-2964 or research@behaviorchangelab.com . You may also contact the research compliance office at 405-744-1676 or http://compliance.vpr.okstate.edu/ if you wish to do so.

I have read and received a copy of this document and have had a chance to ask questions related to the information in this document.

Full Name (Printed)	Signature	Date

Appendix G

Letter to Local Law Enforcement Agencies

29 September 2008

Recipient Address

To Patrol Supervisors:

The Behavior Change Laboratory in the Department of Psychology at Oklahoma State University is currently conducting research on alcohol use among college students. During this research, some students will be asked to wear a SCRAM (Secure Continuous Remote Alcohol Monitor) bracelet as a part of their involvement in the study. All of these individuals are VOLUNTEER research participants, and NOT alcohol/substance abuse offenders. To help identify them as such, an identification sticker has been placed on the SCRAM bracelet, and the individual has been issued a Participant ID Card like the one attached at the end of this letter.

This project has been reviewed and approved by the Institutional Review Board at OSU, and is expected to be carried out during the 2008 Fall Semester (primarily during the months of October and November). In order for this project to be a success, we are asking for the cooperation of local law enforcement agencies. We are hopeful that in working together, we may be able to complete the project quickly and smoothly, and begin working toward a healthier and safer campus and community. We are more than happy to address any questions or concerns you may have and look forward to working together with you on this and future projects.

Sincerely,

Nathaniel John Cooney
Principal Investigator & SCRAM Projects Coordinator
Graduate Student and Psychological Associate
Dept. of Psychology, Oklahoma State University

Thad R. Leffingwell, PhD
Lab Director and Project Supervisor
Assoc. Professor and Director of Clinical Training
Dept. of Psychology, Oklahoma State University

Appendix H

Email Recruitment and Advertising

TEXT FOR RECRUITMENT EMAIL

The Behavior Change Lab at OSU is seeking research participants for a study related to issues of alcohol consumption among college students. To be eligible for this study, participants must be between 18-24 years of age, currently enrolled at least part time in college courses, and consume alcohol on a regular basis.

Participants will be asked to complete self-reported measures in the behavior change lab related to their alcohol consumption on two occasions as well as complete an online follow-up questionnaire at a future date. At the time of enrollment in the study, participants may also be asked to participate in additional aspects of the study for which they may be eligible to receive additional compensation, if selected. In exchange for participation, students will receive 3 SONA credits to satisfy course research requirements.

Space in this study is limited and students must be briefly interviewed by phone before they may be enrolled for participation. If you are interested in learning more about this study or participating in it, please send an email including your name and a phone number where you can be reached to research@behaviorchangelab.com . (Return phone calls will be made between 9am and 9pm).

Participation in this study is voluntary. By participating, students may encounter some potential risks related to reporting their alcohol consumption and related behaviors. To minimize this risk, all possible efforts will be made by the Behavior Change Laboratory to ensure anonymity and protect the confidentiality of all participants and any data they may provide. Potential benefits for participation in this study include compensation for participation as well as the potential to contribute to our understanding of college student drinking and research issues. This study has been reviewed and approved by the Institutional Review Board at Oklahoma State University, which is charged with the protection of human subjects. For general questions about this study, contact the Behavior Change Lab at research@behaviorchangelab.com. For questions or concerns regarding your rights as a human participant in research studies, contact Dr. Shelia Kennison, Ph.D., Chair of OSU's Institutional Review Board at 405-744-1676 or 219 Cordell North, Stillwater, Oklahoma, 74078.

Appendix I

Telephone Screening Script

RECRUITMENT CHECKLIST

Please introduce yourself as a researcher from the Behavior Change Lab at OSU, and indicate that you received an email from (individual) expressing interest in study. Ask participant if they are still interested and if they have a few minutes to answer some questions to see if they are eligible for the study. (For each of the questions below, participant must endorse the underlined answer – please ask all questions regardless, so we can report stats on why participants were excluded)

☐Yes ☐No Are you currently between 18-24 years of age?

☐Yes ☐No Are you currently enrolled in one or more college courses?

☐Yes ☐No During the last 30 days, have you consumed at least 20 beverages containing alcohol (in total)?

☐Yes ☐No During the last 30 days, have you consumed at least 4 beverages containing alcohol during a single 2-hour period?

☐Yes ☐No Are you currently receiving any treatment for alcohol or substance abuse or emotional/behavioral difficulties?

☐Yes ☐No Are you currently the subject of any legal actions related to alcohol or substance abuse?

☐Yes ☐No Some participants will be asked at random to have a close friend or relative who is familiar with your drinking behavior come into the lab and answer questions about your drinking. Is there someone you can think of who would be able to do this for you, if you are selected for this requirement (this person would be compensated for their participation)?

☐Yes ☐No Some participants will be asked at random to wear an electronic monitoring device during the first week of the study. If selected for this requirement, would you be willing to do this in exchange for additional monetary compensation?

☐Yes ☐No Do you have any medical conditions (such as leg injury, skin disease, or circulatory problems) that would prevent you from wearing this device if selected for this requirement?

Inform participant whether/not they are eligible.

Briefly describe experiment process (ie. participant will have first appt on a Tues for approx 30 min- 1 hour. Then they will come back in for their second appt the following Mon for approx 30 min – 1 hour.)

Set/Confirm initial appointment time (Tues) and inform participant we will send them an email reminder the day before. Ask if they have any questions and thank them for their participation.

Participant Name: _____

☐Yes ☐No Eligible? (use recruitment checklist above)

☐Yes ☐No Scheduled? (see google calendar for available appointments)

☐Yes ☐No Assigned to Condition? (fill in 'participant scheduling' worksheet in google documents)

Appendix J

Inclusion and Exclusion Criteria for Participation

CRITERIA FOR PARTICIPATION IN STUDY

INCLUSION criteria for study:

All Potential Subjects MUST (ALL of the following)

1) be currently enrolled at least part-time in college courses
2) be between 18-24 years of age (inclusive)
3) self-report high levels of alcohol consumption that meet the following two criteria
    a. individual has consumed at least 20 beverages containing alcohol during the previous 30 days
    AND
    b. individual has consumed at least 4 beverages containing alcohol during a single two-hour period during the previous 30 days
4) be able and willing to provide a collateral informant (if selected for this condition)
    a. for this study, a collateral informant is defined as any close friend or relative who is familiar with the participant's behaviors regarding alcohol consumption, who is at least 18 years of age, and who is also willing to participate in the study
5) be able and willing to wear an electronic monitoring device for a period not to exceed one week in duration (if selected for this condition)
    a. for this study, the electronic monitoring device is a 'SCRAM' ankle bracelet that is described in the experimental conditions/methods

EXCLUSION criteria for study:

Participants will be excluded from the study if they are currently (ANY of the following):

1) receiving treatment alcohol, substance abuse, emotional, or behavioral difficulties
2) the subject of any legal action related to alcohol or substance use
3) experiencing any physical condition that would limit their ability to wear the SCRAM unit (skin disease, etc)

TERMINATION criteria for study:

Participants will be terminated from the study if during the course of their participation they disclose meeting any of the exclusion criteria defined above. Participants may also be terminated from the study if they show any evidence of deliberate tampering/destruction of the SCRAM units (as identified in SCRAM Participant Agreement).

Appendix K

Demographic Questionnaire

Participant ID _____

Demographics Questionnaire

What is your Gender? ☐ Male ☐ Female ☐ prefer not to respond
What is your current age? _____ Years _____ Months ☐ prefer not to respond
What is your current height? _____ Feet _____ Inches ☐ prefer not to respond
What is your current weight? _____ Pounds ☐ prefer not to respond
Pleas indicate which ethnicity you most closely identify with?
☐ European-American or White ☐ Hispanic or Latino ☐ Biracial / Mixed
☐ African-American or Black ☐ Asian ☐ Other (please specify)
☐ American Indian ☐ Pacific Islander ☐ prefer not to respond

Are you currently enrolled in college courses? ☐ Yes ☐ No ☐ prefer not to respond
How many credit hours are you currently enrolled in? _____ ☐ prefer not to respond
What is your current academic status?
☐ Freshman ☐ junior ☐ graduate/special ☐ prefer not to respond
☐ Sophomore ☐ senior ☐ non-degree seeking
What is your current estimated Grade Point Average (0.0-4.0)?_____ ☐ prefer not to respond
Are you a member of a Greek organization? ☐ Yes ☐ No ☐ prefer not to respond

Are you currently employed? ☐ Yes ☐ No ☐ prefer not to respond
How many hours per week do you currently work? _____ ☐ prefer not to respond

Which of the following best describes your current relationship status?
☐ Single, never married ☐ Married ☐ prefer not to respond
☐ Casual Dating Relationship ☐ Separated
☐ Committed Relationship ☐ Divorced
☐ Life Partner ☐ Widowed

Which of the following best describes your current living situation?
☐ Living with parents/guardian ☐ Living with children ☐ prefer not to respond
☐ Married, living with Spouse ☐ Living with roommates ☐ other (please specify)
☐ Living with partner/significant other ☐ I live alone

Which of the following best describes your housing arrangements?
☐ On-campus dorm ☐Off-campus house ☐ prefer not to respond
☐ On-campus apartment ☐ Greek Housing ☐ Other (specify)
☐ Off-campus apartment

On average, what percentage of your total monthly income do you spend on alcohol or alcohol-related activities?
☐ 0-10 % ☐ 31-40% ☐ 61-70 % ☐ 91-100%
☐ 11-20 % ☐41-50% ☐ 71-80 % ☐ prefer not to respond
☐ 21-30% ☐ 51-60% ☐ 81-90%

Please estimate the total amount of money you have spent on alcohol and related actives (including legal fees, etc) during the last 12-month period. $_____ ☐ prefer not to respond

Appendix L

Daily Drinking Questionnaire

Participant ID _____

DAILY DRINKNING QUESTIONNAIRE (DDQ)

Instructions:
For each day of the week, fill in both the number of drinks consumed and the number of hours you typically drink.

For the past month, please fill in a number for each day of the week indicating the *typical number of drinks* you usually consume on that day, and the *typical number of hours* you usually drink on that day.

Monday	_____# of drinks	_____# of hours
Tuesday	_____# of drinks	_____# of hours
Wednesday	_____# of drinks	_____# of hours
Thursday	_____# of drinks	_____# of hours
Friday	_____# of drinks	_____# of hours
Saturday	_____# of drinks	_____# of hours
Sunday	_____# of drinks	_____# of hours

Appendix M

Quantity and Frequency Questionnaire

Participant ID _____

QUANTITY AND FREQUENCY QUESTIONNAIRE (QFQ)

1. Think of the occasion you drank most this past month. How much did you drink?

☐ No drinks	☐ 5-6 drinks	☐ 11-12 drinks	☐ 17-18 drinks
☐ 0-2 drinks	☐ 7-8 drinks	☐ 13-14 drinks	☐ 19 or more
☐ 3-4 drinks	☐ 9-10 drinks	☐ 15-16 drinks	☐ prefer not to answer

2. On a given weekend evening, how much alcohol do you typically drink? Estimate for the past month.

☐ No drinks	☐ 5-6 drinks	☐ 11-12 drinks	☐ 17-18 drinks
☐ 0-2 drinks	☐ 7-8 drinks	☐ 13-14 drinks	☐ 19 or more
☐ 3-4 drinks	☐ 9-10 drinks	☐ 15-16 drinks	☐ prefer not to answer

3. How often in the past month did you drink alcohol?

- ☐ I do not drink at all
- ☐ about once a month
- ☐ two to three times a month
- ☐ three to four times a month
- ☐ nearly every day
- ☐ once a day or more
- ☐ prefer not to answer

Appendix N

Alcohol Use Disorders Identification Test

Participant ID _____

Alcohol Use Disorders Identification Test (AUDIT)

1. How often do you have a drink containing alcohol?
   - ☐ Never
   - ☐ Monthly or less
   - ☐ 2-4 times a month
   - ☐ 2-3 times a week
   - ☐ 4 or more times a week
   - ☐ Prefer not to answer

2. How many drinks containing alcohol do you have on a typical day when you are drinking?
   - ☐ 1 or 2
   - ☐ 3 or 4
   - ☐ 5 or 6
   - ☐ 7 to 9
   - ☐ 10 or more
   - ☐ Prefer not to answer

3. How often do you have six or more drinks on one occasion?
   - ☐ Never
   - ☐ Less than monthly
   - ☐ Monthly
   - ☐ Weekly
   - ☐ Daily or almost daily
   - ☐ Prefer not to answer

4. How often during the last year have you found that you were not able to stop drinking once you had started?
   - ☐ Never
   - ☐ Less than monthly
   - ☐ Monthly
   - ☐ Weekly
   - ☐ Daily or almost daily
   - ☐ Prefer not to answer

5. How often during the last year have you failed to do what was normally expected of you because of drinking?
   - ☐ Never
   - ☐ Less than monthly
   - ☐ Monthly
   - ☐ Weekly
   - ☐ Daily or almost daily
   - ☐ Prefer not to answer

6. How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?
   - ☐ Never
   - ☐ Less than monthly
   - ☐ Monthly
   - ☐ Weekly
   - ☐ Daily or almost daily
   - ☐ Prefer not to answer

7. How often during the last year have you has a feeling of guilt or remorse after drinking?
   - ☐ Never
   - ☐ Less than monthly
   - ☐ Monthly
   - ☐ Weekly
   - ☐ Daily or almost daily
   - ☐ Prefer not to answer

8. How often during the last year have you been unable to remember what happened the night before because of your drinking?
   - ☐ Never
   - ☐ Less than monthly
   - ☐ Monthly
   - ☐ Weekly
   - ☐ Daily or almost daily
   - ☐ Prefer not to answer

9. Have you or someone else been injured because of your drinking?
   - ☐ No
   - ☐ Yes, but not in the last year
   - ☐ Yes, during the last year
   - ☐ Prefer not to answer

10. Has a relative, friend, doctor, or other health care worker been concerned about your drinking or suggested you cut down?
    - ☐ No
    - ☐ Yes, but not in the last year
    - ☐ Yes, during the last year
    - ☐ Prefer not to answer

Appendix O

Brief Young Adult Alcohol Consequences Questionnaire

Participant ID _____

Brief Young Adult Alcohol Consequences Questionnaire (BYAACQ)

For each of the following items, please indicate whether or not you had the experience identified during the past 12 months.

1.	While drinking, I have said or done embarrassing things.	Yes	No
2.	I have had a hangover (headache, sick stomach) the morning after I had been drinking.	Yes	No
3.	I have felt very sick to my stomach or thrown up after drinking.	Yes	No
4.	I often have ended up drinking on nights when I had planned not to drink.	Yes	No
5.	I have taken foolish risks when I have been drinking.	Yes	No
6.	I have passed out from drinking.	Yes	No
7.	I have found that I needed larger amounts of alcohol to feel any effect, or that I could no longer get high or drunk on the amount that used to get me high or drunk.	Yes	No
8.	When drinking, I have done impulsive things I regretted later.	Yes	No
9.	I've not been able to remember large stretches of time while drinking heavily.	Yes	No
10.	I have driven a car when I knew I had too much to drink to drive safely.	Yes	No
11.	I have not gone to work or missed classes at school because of drinking, a hangover, or illness caused by drinking.	Yes	No
12.	My drinking has gotten me into sexual situations I later regretted.	Yes	No
13.	I have often found it difficult to limit how much I drink.	Yes	No
14.	I have become very rude, obnoxious, or insulting after drinking.	Yes	No
15.	I have woken up in an unexpected place after heavy drinking.	Yes	No
16.	I have felt badly about myself because of my drinking.	Yes	No
17.	I have had less energy or felt tired because of my drinking.	Yes	No
18.	The quality of my work or school work has suffered because of my drinking.	Yes	No
19.	I have spent too much time drinking.	Yes	No
20.	I have neglected my obligations to family, work, or school because of drinking.	Yes	No
21.	My drinking has created problems between myself and my boyfriend/girlfriend/spouse, parents, or other near relatives.	Yes	No
22.	I have been overweight because of drinking.	Yes	No
23.	My physical appearance has been harmed by my drinking.	Yes	No
24.	I have felt like I needed a drink after I'd gotten up (that is, before breakfast).	Yes	No

Appendix P

Brief Timeline Follow-back Questionnaire – page 1

Participant ID _____

BRIEF TIMELINE FOLLOWBACK QUESTIONNAIRE (BTFQ) - PARTICIPANT

INSTRUCTIONS: For the following questions, think back over your activities for the past week, beginning with Tuesday of last week (the first day of the study), and ending with Monday of this week (the last day of the study).

Let's begin with Tuesday, __/__/__
- What activities did you engage in on Tuesday (ex: class, work, gym, party, etc)?
- Did you consume any alcohol at any time on Tuesday?
- How many Standard drinks did you consume?
- What time did you begin drinking?
- What time did you finish drinking?
- How confident are you in your responses above (0-10; not at all – totally)

Now try to think back to last Wednesday, __/__/__
- What activities did you engage in on Wednesday (ex: class, work, gym, party, etc)?
- Did you consume any alcohol at any time on Wednesday?
- How many Standard drinks did you consume?
- What time did you begin drinking?
- What time did you finish drinking?
- How confident are you in your responses above (0-10; not at all – totally)

Now consider last Thursday, __/__/__
- What activities did you engage in on Wednesday (ex: class, work, gym, party, etc)?
- Did you consume any alcohol at any time on Thursday?
- How many Standard drinks did you consume?
- What time did you begin drinking?
- What time did you finish drinking?
- How confident are you in your responses above (0-10; not at all – totally)

Think about last Friday, __/__/__
- What activities did you engage in on Friday (ex: class, work, gym, party, etc)?
- Did you consume any alcohol at any time on Friday?
- How many Standard drinks did you consume?
- What time did you begin drinking?
- What time did you finish drinking?
- How confident are you in your responses above (0-10; not at all – totally)

Now consider this past Saturday, __/__/__
- What activities did you engage in on Saturday (ex: class, work, gym, party, etc)?
- Did you consume any alcohol at any time on Saturday?
- How many Standard drinks did you consume?
- What time did you begin drinking?
- What time did you finish drinking?
- How confident are you in your responses above (0-10; not at all – totally)

Brief Timeline Follow-back Questionnaire – page 2

Participant ID _____

Now think about this past Sunday, __/__/__

What activities did you engage in on Sunday (ex: class, work, gym, party, etc)?
Did you consume any alcohol at any time on Sunday?
How many Standard drinks did you consume?
What time did you begin drinking?
What time did you finish drinking?
How confident are you in your responses above (0-10; not at all – totally)

Finally, think about Monday, __/__/__

What activities did you engage in on Monday (ex: class, work, gym, party, etc)?
Did you consume any alcohol at any time on Monday?
How many Standard drinks did you consume?
What time did you begin drinking?
What time did you finish drinking?
How confident are you in your responses above (0-10; not at all – totally)

Appendix Q1

Alcohol Assessment Context Questionnaire (Form A) – page 1

Form A (B-C-) Participant ID _____

Alcohol Assessment Context Questionnaire (AACQ)

Suppose that you had been asked to wear an electronic device that measured your body's response (ie. heart rate, breathing, skin temperature, sweat, etc) to physical activity during periods when alcohol was either present or absent in your body.

1a. Would the presence of this device likely have an influence on your physical activities while wearing it? (yes/no)
1b. How much would it influence your activities? (0-10; not at all – very much)
1c. In what way would it influence your physical activities? (ex: I wouldn't go dancing because I was wearing the device, etc) (open-ended)

2a. Would the presence of the device likely have an influence on your alcohol consumption while wearing it? (yes/no)
2b. How much would it influence your alcohol consumption? (0-10; not at all – very much)
2c. In what way would it influence your drinking? (ex: I drank more/less than normal because of the device, etc) (open-ended)

3a. Would the presence of the device likely influence the way you responded to questions about your alcohol consumption while wearing it? (yes/no)
3b. How much would it influence your responding? (0-10; not at all – very much)
3c. In what way would it influence your responses about your drinking? (ex: I was more/less cautious about reporting my alcohol use, etc) (open-ended)

Form A (B-C-) Participant ID _____

For the following questions, suppose that you had been given, instead, a device that was also able to measure your actual alcohol consumption (i.e. how much/how often you drank) and were told this information would be compared with your responses.

4a. Would this likely have an influence on your alcohol consumption while wearing this type of device? (yes/no)
4b. How much would this influence your drinking? (0-10; not at all – very much)
4c. In what way would this influence your drinking? (ex: I would drink more/less, would not have an impact, etc) (open-ended)

5a. Would this likely influence the way you responded to questions about your alcohol consumption while wearing this type of device? (yes/no)
5b. How much would it influence your responding? (0-10; not at all – very much)
5c. In what way would this influence your responses about your drinking? (ex: I would be more/less cautious about reporting my alcohol use, etc) (open-ended)

For the following questions, suppose that you had been asked to provide a second person (friend/relative) who could report on your activities over the past week.

Knowing that your own responses would be compared to / verified by someone else...

6a. Would this likely have an influence on your alcohol consumption during the week? (yes/no)
6b. How much would this influence your drinking? (0-10; not at all – very much)
6c. In what way would this influence your drinking? (ex: I would drink more/less, would not have an impact, etc) (open-ended)

7a. Would this likely influence the way you responded to questions about your alcohol consumption during the week? (yes/no)
7b. How much would it influence your responding? (0-10; not at all – very much)
7c. In what way would this influence your responses about your drinking? (ex: I would be more/less cautious about reporting my alcohol use, etc) (open-ended)

Form A (B-C-) Participant ID _____

You completed this questionnaire in a research setting where confidentiality was assured and there were no obvious benefits or consequences associated with your responses.

8a.	Did any factors related to the research setting influence your behaviors regarding alcohol consumption during the week?	(yes/no)
8b.	How much did this influence your drinking?	(0-10; not at all – very much)
8c.	In what way did this influence your drinking?	(open-ended)
9a.	Did any factors related to the research setting influence the way you responded to questions about your alcohol consumption during the week?	(yes/no)
9b.	How much did this influence your responses about your drinking?	(0-10; not at all – very much)
9c.	In what way did this influence your responses about your drinking?	(open-ended)

Suppose that you were being asked to complete this questionnaire in a legal setting (court) where there was no confidentiality and there may be consequences tied to your responses.

10a.	Would any factors related to the legal setting influence your behaviors regarding alcohol consumption?	(yes/no)
10b.	How much would this influence your drinking?	(0-10, not at all – very much)
10c.	In what way would this setting influence your drinking?	(open-ended)
11a.	Would any factors related to the legal setting influence the way you responded to questions about your alcohol consumption?	(yes/no)
11b.	How much would this influence your responses about your drinking?	(0-10, not at all – very much)
11c.	In what way would this influence your responses about your drinking?	(open-ended)

Suppose that you were being asked to complete this questionnaire in a treatment setting where confidentiality was assured, but where your ability to get the help that you needed depended on your responses.

12a.	Would any factors related to the treatment setting influence your behaviors regarding alcohol consumption?	(yes/no)
12b.	How much would this influence your drinking?	(0-10, not at all – very much)
12c.	In what way would this setting influence your drinking?	(open-ended)
13a.	Would any factors related to the treatment setting influence the way you responded to questions about your alcohol consumption?	(yes/no)
13b.	How much would this influence your responses about your drinking?	(0-10, not at all – very much)
13c.	In what way would this influence your responses about your drinking?	(open-ended)

Appendix Q2

Alcohol Assessment Context Questionnaire (Form B) – page 1

Form B (B+C-) Participant ID _____

Alcohol Assessment Context Questionnaire (AACQ)

You wore an electronic device that measured your body's response (ie. heart rate, breathing, skin temperature, sweat, etc) to physical activity during periods when alcohol was either present or absent in your body.

1a.	Did the presence of this device <u>influence your physical activities</u> during the past week?	(yes/no)
1b.	How much did it influence your activities?	(0-10; not at all – very much)
1c.	In what way did it influence your physical activities? (ex: I didn't go dancing because I was wearing the device, etc)	(open-ended)

2a.	Did the presence of this device <u>influence your alcohol consumption</u> during the past week?	(yes/no)
2b.	How much did it influence your alcohol consumption?	(0-10; not at all – very much)
2c.	In what way did it influence your drinking? (ex: I drank more/less than normal because of the device, etc)	(open-ended)

3a.	Did the presence of the device <u>influence the way you responded to questions about your alcohol consumption</u> during the past week?	(yes/no)
3b.	How much did it influence your responding?	(0-10; not at all – very much)
3c.	In what way did it influence your responses about your drinking? (ex: I was more/less cautious about reporting my alcohol use, etc)	(open-ended)

Form B (B+C-) Participant ID _____

For the following questions, suppose that you had been given, instead, a device that was also able to measure your actual alcohol consumption (i.e. how much/how often you drank) and were told this information would be compared with your responses.

4a. Would this likely have an influence on your alcohol consumption while wearing this type of device? (yes/no)
4b. How much would this influence your drinking? (0-10; not at all – very much)
4c. In what way would this influence your drinking? (ex: I would drink more/less, would not have an impact, etc) (open-ended)

5a. Would this likely influence the way you responded to questions about your alcohol consumption while wearing this type of device? (yes/no)
5b. How much would it influence your responding? (0-10; not at all – very much)
5c. In what way would this influence your responses about your drinking? (ex: I would be more/less cautious about reporting my alcohol use, etc) (open-ended)

For the following questions, suppose that you had been asked to provide a second person (friend/relative) who could report on your activities over the past week.

Knowing that your own responses would be compared to / verified by someone else…

6a. Would this likely have an influence on your alcohol consumption during the week? (yes/no)
6b. How much would this influence your drinking? (0-10; not at all – very much)
6c. In what way would this influence your drinking? (ex: I would drink more/less, would not have an impact, etc) (open-ended)

7a. Would this likely influence the way you responded to questions about your alcohol consumption during the week? (yes/no)
7b. How much would it influence your responding? (0-10; not at all – very much)
7c. In what way would this influence your responses about your drinking? (ex: I would be more/less cautious about reporting my alcohol use, etc) (open-ended)

Form B (B+C-) Participant ID _____

You completed this questionnaire in a research setting where confidentiality was assured and there were no obvious benefits or consequences associated with your responses.

8a.	Did any factors related to the research setting influence your behaviors regarding alcohol consumption during the week?	(yes/no)
8b.	How much did this influence your drinking?	(0-10; not at all – very much)
8c.	In what way did this influence your drinking?	(open-ended)
9a.	Did any factors related to the research setting influence the way you responded to questions about your alcohol consumption during the week?	(yes/no)
9b.	How much did this influence your responses about your drinking?	(0-10; not at all – very much)
9c.	In what way did this influence your responses about your drinking?	(open-ended)

Suppose that you were being asked to complete this questionnaire in a legal setting (court) where there was no confidentiality and there may be consequences tied to your responses.

10a.	Would any factors related to the legal setting influence your behaviors regarding alcohol consumption?	(yes/no)
10b.	How much would this influence your drinking?	(0-10, not at all – very much)
10c.	In what way would this setting influence your drinking?	(open-ended)
11a.	Would any factors related to the legal setting influence the way you responded to questions about your alcohol consumption?	(yes/no)
11b.	How much would this influence your responses about your drinking?	(0-10, not at all – very much)
11c.	In what way would this influence your responses about your drinking?	(open-ended)

Suppose that you were being asked to complete this questionnaire in a treatment setting where confidentiality was assured, but where your ability to get the help that you needed depended on your responses.

12a.	Would any factors related to the treatment setting influence your behaviors regarding alcohol consumption?	(yes/no)
12b.	How much would this influence your drinking?	(0-10, not at all – very much)
12c.	In what way would this setting influence your drinking?	(open-ended)
13a.	Would any factors related to the treatment setting influence the way you responded to questions about your alcohol consumption?	(yes/no)
13b.	How much would this influence your responses about your drinking?	(0-10, not at all – very much)
13c.	In what way would this influence your responses about your drinking?	(open-ended)

Appendix Q3

Alcohol Assessment Context Questionnaire (Form C) – page 1

Form C (B-C+) Participant ID _____

Alcohol Assessment Context Questionnaire (AACQ)

For the following questions, suppose that you had been asked to wear an electronic device that measured your body's response (ie. heart rate, breathing, skin temperature, sweat, etc) to physical activity during periods when alcohol was either present or absent in your body.

1a. Would the presence of this device likely have an influence on your physical activities while wearing it? (yes/no)
1b. How much would it influence your activities? (0-10; not at all – very much)
1c. In what way would it influence your physical activities? (ex: I wouldn't go dancing because I was wearing the device, etc) (open-ended)

2a. Would the presence of the device likely have an influence on your alcohol consumption while wearing it? (yes/no)
2b. How much would it influence your alcohol consumption? (0-10; not at all – very much)
2c. In what way would it influence your drinking? (ex: I drank more/less than normal because of the device, etc) (open-ended)

3a. Would the presence of the device likely influence the way you responded to questions about your alcohol consumption while wearing it? (yes/no)
3b. How much would it influence your responding? (0-10; not at all – very much)
3c. In what way would it influence your responses about your drinking? (ex: I was more/less cautious about reporting my alcohol use, etc) (open-ended)

Form C (B-C+) Participant ID _____

For the following questions, suppose that you had been given, instead, a device that was also able to measure your actual alcohol consumption (i.e. how much/how often you drank) and were told this information would be compared with your responses.

4a. Would this likely have an influence on your alcohol consumption while wearing this type of device? (yes/no)
4b. How much would this influence your drinking? (0-10; not at all – very much)
4c. In what way would this influence your drinking? (ex: I would drink more/less, would not have an impact, etc) (open-ended)

5a. Would this likely influence the way you responded to questions about your alcohol consumption while wearing this type of device? (yes/no)
5b. How much would it influence your responding? (0-10; not at all – very much)
5c. In what way would this influence your responses about your drinking? (ex: I would be more/less cautious about reporting my alcohol use, etc) (open-ended)

You were asked to provide a second person (friend/relative) who could report on your activities over the past week.

Knowing that your own responses would be compared to / verified by someone else...

6a. Did this likely have an influence on your alcohol consumption during the week? (yes/no)
6b. How much did this influence your drinking? (0-10; not at all – very much)
6c. In what way did this influence your drinking? (ex: I would drink more/less, would not have an impact, etc) (open-ended)

7a. Did this likely influence the way you responded to questions about your alcohol consumption during the week? (yes/no)
7b. How much did it influence your responding? (0-10; not at all – very much)
7c. In what way did this influence your responses about your drinking? (ex: I would be more/less cautious about reporting my alcohol use, etc) (open-ended)

Form C (B-C+) Participant ID _____

You completed this questionnaire in a research setting where confidentiality was assured and there were no obvious benefits or consequences associated with your responses.

8a.	Did any factors related to the research setting influence your behaviors regarding alcohol consumption during the week?	(yes/no)
8b.	How much did this influence your drinking?	(0-10; not at all – very much)
8c.	In what way did this influence your drinking?	(open-ended)
9a.	Did any factors related to the research setting influence the way you responded to questions about your alcohol consumption during the week?	(yes/no)
9b.	How much did this influence your responses about your drinking?	(0-10; not at all – very much)
9c.	In what way did this influence your responses about your drinking?	(open-ended)

Suppose that you were being asked to complete this questionnaire in a legal setting (court) where there was no confidentiality and there may be consequences tied to your responses.

10a.	Would any factors related to the legal setting influence your behaviors regarding alcohol consumption?	(yes/no)
10b.	How much would this influence your drinking?	(0-10, not at all – very much)
10c.	In what way would this setting influence your drinking?	(open-ended)
11a.	Would any factors related to the legal setting influence the way you responded to questions about your alcohol consumption?	(yes/no)
11b.	How much would this influence your responses about your drinking?	(0-10, not at all – very much)
11c.	In what way would this influence your responses about your drinking?	(open-ended)

Suppose that you were being asked to complete this questionnaire in a treatment setting where confidentiality was assured, but where your ability to get the help that you needed depended on your responses.

12a.	Would any factors related to the treatment setting influence your behaviors regarding alcohol consumption?	(yes/no)
12b.	How much would this influence your drinking?	(0-10, not at all – very much)
12c.	In what way would this setting influence your drinking?	(open-ended)
13a.	Would any factors related to the treatment setting influence the way you responded to questions about your alcohol consumption?	(yes/no)
13b.	How much would this influence your responses about your drinking?	(0-10, not at all – very much)
13c.	In what way would this influence your responses about your drinking?	(open-ended)

Appendix Q4

Alcohol Assessment Context Questionnaire (Form D) – page 1

Form D (B+C+) Participant ID _____

Alcohol Assessment Context Questionnaire (AACQ)

You wore an electronic device that measured your body's response (ie. heart rate, breathing, skin temperature, sweat, etc) to physical activity during periods when alcohol was either present or absent in your body.

1a.	Did the presence of this device influence your physical activities during the past week?	(yes/no)
1b.	How much did it influence your activities?	(0-10; not at all – very much)
1c.	In what way did it influence your physical activities? (ex: I didn't go dancing because I was wearing the device, etc)	(open-ended)
2a.	Did the presence of this device influence your alcohol consumption during the past week?	(yes/no)
2b.	How much did it influence your alcohol consumption?	(0-10; not at all – very much)
2c.	In what way did it influence your drinking? (ex: I drank more/less than normal because of the device, etc)	(open-ended)
3a.	Did the presence of the device influence the way you responded to questions about your alcohol consumption during the past week?	(yes/no)
3b.	How much did it influence your responding?	(0-10; not at all – very much)
3c.	In what way did it influence your responses about your drinking? (ex: I was more/less cautious about reporting my alcohol use, etc)	(open-ended)

Form D (B+C+) Participant ID _____

For the following questions, suppose that you had been given, instead, a device that was also able to measure your actual alcohol consumption (i.e. how much/how often you drank) and were told this information would be compared with your responses.

4a. Would this likely have an influence on your alcohol consumption while wearing this type of device? (yes/no)
4b. How much would this influence your drinking? (0-10; not at all – very much)
4c. In what way would this influence your drinking? (ex: I would drink more/less, would not have an impact, etc) (open-ended)

5a. Would this likely influence the way you responded to questions about your alcohol consumption while wearing this type of device? (yes/no)
5b. How much would it influence your responding? (0-10; not at all – very much)
5c. In what way would this influence your responses about your drinking? (ex: I would be more/less cautious about reporting my alcohol use, etc) (open-ended)

You were asked to provide a second person (friend/relative) who could report on your activities over the past week.

Knowing that your own responses would be compared to / verified by someone else…

6a. Did this likely have an influence on your alcohol consumption during the week? (yes/no)
6b. How much did this influence your drinking? (0-10; not at all – very much)
6c. In what way did this influence your drinking? (ex: I would drink more/less, would not have an impact, etc) (open-ended)

7a. Did this likely influence the way you responded to questions about your alcohol consumption during the week? (yes/no)
7b. How much did it influence your responding? (0-10; not at all – very much)
7c. In what way did this influence your responses about your drinking? (ex: I would be more/less cautious about reporting my alcohol use, etc) (open-ended)

Form D (B+C+) Participant ID _____

You completed this questionnaire in a research setting where confidentiality was assured and there were no obvious benefits or consequences associated with your responses.

8a.	Did any factors related to the research setting influence your behaviors regarding alcohol consumption during the week?	(yes/no)
8b.	How much did this influence your drinking?	(0-10; not at all – very much)
8c.	In what way did this influence your drinking?	(open-ended)
9a.	Did any factors related to the research setting influence the way you responded to questions about your alcohol consumption during the week?	(yes/no)
9b.	How much did this influence your responses about your drinking?	(0-10; not at all – very much)
9c.	In what way did this influence your responses about your drinking?	(open-ended)

Suppose that you were being asked to complete this questionnaire in a legal setting (court) where there was no confidentiality and there may be consequences tied to your responses.

10a.	Would any factors related to the legal setting influence your behaviors regarding alcohol consumption?	(yes/no)
10b.	How much would this influence your drinking?	(0-10, not at all – very much)
10c.	In what way would this setting influence your drinking?	(open-ended)
11a.	Would any factors related to the legal setting influence the way you responded to questions about your alcohol consumption?	(yes/no)
11b.	How much would this influence your responses about your drinking?	(0-10, not at all – very much)
11c.	In what way would this influence your responses about your drinking?	(open-ended)

Suppose that you were being asked to complete this questionnaire in a treatment setting where confidentiality was assured, but where your ability to get the help that you needed depended on your responses.

12a.	Would any factors related to the treatment setting influence your behaviors regarding alcohol consumption?	(yes/no)
12b.	How much would this influence your drinking?	(0-10, not at all – very much)
12c.	In what way would this setting influence your drinking?	(open-ended)
13a.	Would any factors related to the treatment setting influence the way you responded to questions about your alcohol consumption?	(yes/no)
13b.	How much would this influence your responses about your drinking?	(0-10, not at all – very much)
13c.	In what way would this influence your responses about your drinking?	(open-ended)

Appendix R

Participant Satisfaction Questionnaire – page 1

Participant ID _____

Participant Satisfaction Questionnaire (PSQ)

THANK YOU for assisting us with this study. We appreciate your assistance. Please complete the following few questions to complete your participation.

For the following items, please make a mark on the line that best reflects your experience and opinion related to the anchors at either end of the line.

Example
Consider the following sample item:

The OSU football team is going to win the national championship in 2008.
Very Unlikely ——— Very Likely

If you thought it was **very unlikely**, you would put a mark near that end of the line, like this:
Very Unlikely /——— Very Likely

If you thought it was **very likely**, you would put a mark near the other end like this:
Very Unlikely ———/ Very Likely

If you thought it was **more likely than not, but did not feel strongly so,** you would put a mark just past the middle like this:
Very Unlikely ——— / ——— Very Likely

1. I think the ankle bracelet is:
Very Uncomfortable ——— Very Comfortable

2. Compared to usual, while wearing the device, I could perform my daily activities at home (such as walking, showering, dressing, cooking) with:
No Difficulty ——— Great Difficulty

3. Compared to usual, while wearing the device, I could perform my daily activities at work or outside my home (such as driving, working, shopping) with:
No Difficulty ——— Great Difficulty

4. Compared to usual, while wearing the device, I could do physical activities (running, playing sports) with:
No Difficulty ——— Great Difficulty

5. Compared to usual, while wearing the device, I could do my nighttime activities (sleep, sex) with:
No Difficulty ——— Great Difficulty

6. Other people saw the monitor and asked me questions about it:
Didn't Happen ——— Happened Frequently

Participant Satisfaction Questionnaire – page 2

Participant ID _____

In your own words, please describe all that you know about the ankle bracelet (what it does, how it works, etc)

Please comment on your experience with the **INSTALLATION** of the ankle bracelet:

Please comment on your experience with **WEARING** the ankle bracelet:

Please comment on your overall experience with this research project:

Now that your experience in the project has concluded, is there anything that you wish we had told you at the beginning of the project (that we should be sure to tell future participants)?

In your opinion, do you feel that the compensation for participation (3 research credits and $25) was adequate for your time and inconvenience to participate in the study? If not, please comment on what you feel might be more appropriate.

Please provide any other comments that you would like to share relative to your participation in this project:

Appendix S

College Drinking Collateral Questionnaire

Collateral ID _____ Participant ID _____

COLLEGE DRINKING COLLATERAL QUESTIONAIRE (CDCQ)

What is your current age?
What is your Gender?
Are you currently enrolled in college courses?
What is your current academic status? (freshman, sophomore, junior, senior, graduate/special)

What is the nature of your relationship to the individual?
Check the one answer that describes you best:
Spouse (husband/wife)
Romantic Partner (boyfriend, girlfriend, fiancé)
Sibling (brother/sister)
Friend
Greek (fraternity brother/ sorority sister)
Roommate / Housemate
Classmate
Other (please specify): _____

How long have you known this individual? _____ Years, _____Months

How well do you know this individual overall? (0-10; not at all – very much)

How close is your relationships to the individual (0-10; not at all close – very close)

How familiar are you with this individual's daily activities? (0-10; not at all – very much)

How familiar are you with this individual's behaviors regarding alcohol consumption? (0-10; not at all – very much)

On average,
How many days per week do you spend time with this individual? (0-7)
How many hours per day do you spend with this individual? (0-24)
How many occasions per week do you have to observe this individual consume alcohol?
How confident are you in these estimates? (0-10; not at all – totally)

Over the last week specifically (Tuesday __/__/__ to Monday __/__/__)
How many days did you spend time with this individual? (0-7)
How many hours per day did you spend with this individual? (0-24)
How many occasions did you have to observe this individual consume alcohol?
How confident are you in these estimates? (0-10; not at all – totally)

Appendix T

Brief Timeline Follow-back Questionnaire (collateral version) – page 1

Collateral ID _____ Participant ID _____

Brief Timeline Follow-back Questionnaire – collateral version (BTFQ-cv)

INSTRUCTIONS: For the following questions, consider the individual's activities over the past week, beginning with Tuesday of last week (the first day of the study), and ending with Monday of this week (the last day of the study).

Let's begin with Tuesday, __/__/__

To the best of your knowledge, what activities did the individual engage in on Tuesday? (ex: class, work, gym, etc)

Were you with the individual during some/all of these activities?
If yes, which ones?

To the best of your knowledge, did the individual consume any alcohol at any time on Tuesday?

If Yes:
How many standard drinks did the individual consume?
Approximately what time did the individual start drinking?
Approximately what time did the individual finish drinking?

Were you present when the individual consumed alcohol on Tuesday?
If yes, did you also consume alcohol with this individual on Tuesday?
If no, on what information did you base your responses above?
(ie. Individual told you, typical behavior for individual, guess, etc)

How confident are you in responses regarding the individual's alcohol consumption on Tuesday __/__/__?
(0-10; not at all – totally)

Now try to think back to last Wednesday, __/__/__

To the best of your knowledge, what activities did the individual engage in on Wednesday? (ex: class, work, etc)

Were you with the individual during some/all of these activities?
If yes, which ones?

To the best of your knowledge, did the individual consume any alcohol at any time on Wednesday?

If Yes:
How many standard drinks did the individual consume?
Approximately what time did the individual start drinking?
Approximately what time did the individual finish drinking?

Were you present when the individual consumed alcohol on Wednesday?
If yes, did you also consume alcohol with this individual on Wednesday?
If no, on what information did you base your responses above?
(ie. Individual told you, typical behavior for individual, guess, etc)

How confident are you in responses regarding the individual's alcohol consumption on Wednesday __/__/__?
(0-10; not at all – totally)

Brief Timeline Follow-back Questionnaire (collateral version) – page 2

Collateral ID _____ Participant ID _____

Now consider last Thursday, __/__/__

To the best of your knowledge, what activities did the individual engage in on Thursday? (ex: class, work, gym, etc)

Were you with the individual during some/all of these activities?
If yes, which ones?

To the best of your knowledge, did the individual consume any alcohol at any time on Thursday?

If Yes:
How many standard drinks did the individual consume?
Approximately what time did the individual start drinking?
Approximately what time did the individual finish drinking?

Were you present when the individual consumed alcohol on Thursday?
If yes, did you also consume alcohol with this individual on Thursday?
If no, on what information did you base your responses above?
(ie. Individual told you, typical behavior for individual, guess, etc)

How confident are you in responses regarding the individual's alcohol consumption on Thursday __/__/__?
(0-10; not at all – totally)

Think about last Friday, __/__/__

To the best of your knowledge, what activities did the individual engage in on Friday? (ex: class, work, gym, etc)

Were you with the individual during some/all of these activities?
If yes, which ones?

To the best of your knowledge, did the individual consume any alcohol at any time on Friday?

If Yes:
How many standard drinks did the individual consume?
Approximately what time did the individual start drinking?
Approximately what time did the individual finish drinking?

Were you present when the individual consumed alcohol on Friday?
If yes, did you also consume alcohol with this individual on Friday?
If no, on what information did you base your responses above?
(ie. Individual told you, typical behavior for individual, guess, etc)

How confident are you in responses regarding the individual's alcohol consumption on Friday __/__/__?
(0-10; not at all – totally)

Collateral ID _____ Participant ID _____

Now consider this past Saturday, __/__/__

To the best of your knowledge, what activities did the individual engage in on Saturday? (ex: class, work, gym, etc)

Were you with the individual during some/all of these activities?
If yes, which ones?

To the best of your knowledge, did the individual consume any alcohol at any time on Saturday?

If Yes:
How many standard drinks did the individual consume?
Approximately what time did the individual start drinking?
Approximately what time did the individual finish drinking?

Were you present when the individual consumed alcohol on Saturday?
If yes, did you also consume alcohol with this individual on Saturday?
If no, on what information did you base your responses above?
(ie. Individual told you, typical behavior for individual, guess, etc)

How confident are you in responses regarding the individual's alcohol consumption on Saturday __/__/__?
(0-10; not at all – totally)

Now think about this past Sunday, __/__/__

To the best of your knowledge, what activities did the individual engage in on Saturday? (ex: class, work, gym, etc)

Were you with the individual during some/all of these activities?
If yes, which ones?

To the best of your knowledge, did the individual consume any alcohol at any time on Sunday?

If Yes:
How many standard drinks did the individual consume?
Approximately what time did the individual start drinking?
Approximately what time did the individual finish drinking?

Were you present when the individual consumed alcohol on Sunday?
If yes, did you also consume alcohol with this individual on Sunday?
If no, on what information did you base your responses above?
(ie. Individual told you, typical behavior for individual, guess, etc)

How confident are you in responses regarding the individual's alcohol consumption on Sunday __/__/__?
(0-10; not at all – totally)

Collateral ID _____ Participant ID _____

Finally, think about Monday, __/__/__

To the best of your knowledge, what activities did the individual engage in on Monday? (ex: class, work, gym, etc)

Were you with the individual during some/all of these activities?
If yes, which ones?

To the best of your knowledge, did the individual consume any alcohol at any time on Monday?

If Yes:
How many standard drinks did the individual consume?
Approximately what time did the individual start drinking?
Approximately what time did the individual finish drinking?

Were you present when the individual consumed alcohol on Monday?
If yes, did you also consume alcohol with this individual on Monday?
If no, on what information did you base your responses above?
(ie. Individual told you, typical behavior for individual, guess, etc)

How confident are you in responses regarding the individual's alcohol consumption on Monday __/__/__?
(0-10; not at all – totally)

You have supplied responses regarding this individual's drinking behaviors during the previous week. Would you say this pattern is typical for this individual? (why or why not?)

Did you discuss your responses with the individual at any time before or during completing this questionnaire?
(if yes, what did you discuss?)

Were there any factors that may have influenced the accuracy of your responses?
(ie. guessing, inability to recall information, concern over confidentiality, etc?)

In your opinion, do you feel that the compensation for participation ($25) was adequate for your time and inconvenience to participate in the study? If not, please comment on what you feel might be more appropriate.

Please comment on your experience(s) interacting with staff during this study. (Were they courteous? Was confidentiality explained? Did they answer your questions?, etc)

Please provide any other comments that you would like to share relative to your participation in this project:

VITA

Nathaniel John Cooney

Candidate for the Degree of

Master of Science

Thesis: EVALUATING THE METHODOLOGY IN COLLEGE ALCOHOL RESEARCH

Major Field: Psychology

Biographical:

Education:
Awarded the Bachelor of Science degree in Psychology in June 2006 by Wright State University in Dayton, Ohio. Completed the requirements for the Master of Science in Clinical Psychology at Oklahoma State University, Stillwater, Oklahoma in December, 2009.

Experience:
Teaching and Research Experience include graduate teaching and research assistantships through the Department of Psychology at Oklahoma State University, SCRAM Projects Coordinator for the Behavior Change Laboratory at Oklahoma State University and the Back on TRAC Program Evaluator for the Division of Student Affairs at Oklahoma State University. Clinical experience includes the Psychological Services Center and the Alcohol and Substance Abuse Center at Oklahoma State University; as well as the Behavioral Health Services Headquarters of The Cherokee Nation.

Professional Memberships:
American Psychological Association (Div 2, 12, & 38), Oklahoma Psychological Association, Association of Behavioral and Cognitive Therapies, the OSU Psychology Graduate Students Association, and the OSU Graduate and Professional Students Government Association.

Name: Nathaniel John Cooney Date of Degree: December, 2009

Institution: Oklahoma State University Location: Stillwater, Oklahoma

Title of Study: EVALUATING THE METHODOLOGY IN COLLEGE ALCOHOL RESEARCH

Pages in Study: 135 Candidate for the Degree of Master of Science

Major Field: Clinical Psychology

Scope and Method of Study:
The lack of a "gold-standard" of measurement in addictions research has facilitated the continued wide-spread reliance on the self-report as a primary means of collecting data, despite the field's own long-held skepticism in the veracity of that report. Secondary informants (collaterals) have often served as corroborating evidence, but the veracity of these reports has come with skepticism of its own. The current study sought not to validate the veracity of the self- or collateral-report, but rather to see if the inclusion of a collateral informant in a research study systematically altered an individual's drinking practices or the way the self-report was made. This question was explored by varying the inclusion of collateral informants as well as an independent objective measure (continuous transdermal alcohol monitoring) in a randomized control design, using a sample of college students identified as high-risk alcohol consumers.

Findings and Conclusions:
Self-reports of alcohol consumption made by heavy-drinking college students were not significantly impacted by the inclusion or exclusion of a collateral informant. This finding held true even when comparing the self-reports against independent objective measures of the students' actual drinking. Specifically, self-reports were no more or less consistent with transdermal reports when collateral reports were obtained. One inference that might be drawn from these findings is that while collateral reports provide additional and often valuable information in alcohol research, their mere presence does not appear to systematically impact the data collected through self-reports in the population studied. Interestingly, a strong association was observed between data collected through self-reports and through transdermal alcohol monitors, with both measures showing a high degree of correspondence. This result may lend support to the use of transdermal monitors as a measure of alcohol consumption in future research. It may further support the use of self-reports as an adequate approximation of alcohol consumption within this population, when data are collected are controlled conditions and using best available practices for assessment.

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