

EVALUATION OF A MEASURE OF LEGAL RISK
BEHAVIORS IN COLLEGE STUDENTS
WHO USE ALCOHOL

By

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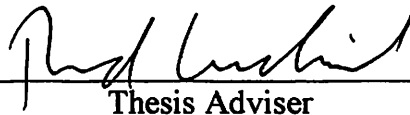
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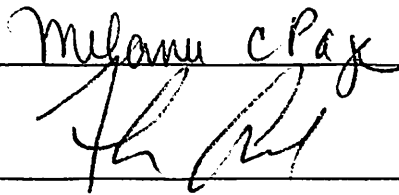
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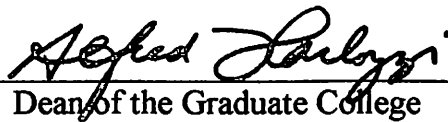
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This project is dedicated to the memory of Dustin D. Gunter. I hope that this project expresses the importance of better understanding how collegiate alcohol use can be harmful. I also hope that the conclusions of this, and future, research will help inform more effective prevention and intervention strategies for individuals who are risk of being hurt by alcohol use or who are at risk for hurting others through their alcohol use.

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CHAPTER I

INTRODUCTION

Background

Binge drinking by college students has been characterized as the “single most serious public health problem confronting American colleges” (Wechsler, Dowdall, Maenner, Glendhill-Hoyt, & Lee, 1998, p.57). Alcohol-related problems have been found to be closely related to a pattern of use called “binge drinking,” which is defined as consuming five or more drinks for men and four or more drinks for women on any single occasion during a two week period (Wechsler, Davenport, Dowdall, Moeykens, & Castillo, 1994). Research indicates that, nationwide, approximately two in five college students engage in binge drinking annually (O’Malley & Johnston, 2002). Despite the high prevalence of college student drinking, a number of consequences may occur which make binge drinking a dangerous and sometimes fatal habit, with 1,400 alcohol-related student deaths occurring each year (Hingson, Heeren, Zakocs, Kopstein, & Wechsler, 2002).

Binge drinking college students may experience a plethora of negative consequences, which may occur in interpersonal, intrapersonal, community, and legal arenas. Interpersonal consequences include getting into fights, experiencing or initiating sexual violence, and being involved in or being the victim of property damage and vandalism (Perkins, 2002). Intrapersonal consequences of collegiate binge drinking include experiencing academic problems, injuries and accidents, driving after drinking, suffering

brain damage, experiencing an increased likelihood of using illicit substances, suffering memory loss, and experiencing an increased vulnerability to injury and violent behavior, including sexual aggression (Vicary & Karshin, 2002; Wechsler, Lee, Kuo, & Lee, 2000b).

The negative consequences of collegiate binge drinking also impact the community in which they occur. These consequences include property damage, vandalism, fights and interpersonal violence, sexual violence, and harassment (Perkins, 2000). Additionally, non-binging and abstaining college students on campuses with higher rates of binge drinking experience the secondhand effects of binge drinking more when compared to similar students on low-binge campuses (Wechsler, Lee, Kuo, and Lee, 2000c).

In addition to the consequences cited above, binge drinking among college students may lead to legal problems. Specific alcohol-related legal problems may include driving under the influence (DUI), being arrested for liquor law violations, or experiencing other trouble with the police or campus authorities (Perkins, 2002). Fifty-six percent of male, heavy drinkers and 43% of female, heavy drinkers drive while intoxicated (Engs, Diebold, & Hanson, 1996), with only two percent of those students arrested for drunk driving (Presley, Meilman, & Cashin, 1996). An additional five to ten percent of alcohol-using students report getting into trouble with authorities (Engs & Hanson, 1994). Moreover, for many college students, alcohol use is an illegal act itself. Students who are under the legal drinking age of 21 are reported to consume a significant portion of the alcohol on college campuses (Miller, Stout, & Shepard, 2000). Research indicates that approximately two in three underage college students illegally drink alcohol and two in

five underage college students consume five or more drinks per occasion (Wechsler et al., 2000b). Indeed, the high prevalence of adolescent and young adult alcohol use contributes to harmful, and even fatal, consequences. For example, United States Traffic Safety Administration studies report that 45% of traffic deaths in 1996 among individuals age 15 to 24 were alcohol-related (Hingson, 1998). Additional evidence suggests that the risk of a fatality accident increases with each alcoholic drink (Hingson, 1998). Researchers on the Oklahoma State University campus sampled 641 undergraduates and found that in the previous year, 28.3% of respondents had experienced some form of public misconduct (e.g., legal encounters, fights/arguments, DWI/DUI, vandalism) as a result of alcohol or drug use (Oklahoma State University On-line, 2003). Clearly, the frequency of collegiate alcohol use and the legal ramifications are substantial.

The Problem

The information regarding the prevalence rate of college students' alcohol use and experience of legal encounters through frequency counts is useful. However, frequency counts provide little information regarding which students who use alcohol are more likely to have legal encounters. More importantly, this information fails to provide knowledge about whether experiencing a legal encounter prevents future problems in the interpersonal, intrapersonal, community, and legal arenas. Little is known about the actual *effects* of legal consequences on subsequent alcohol use. Intuitively, legal problems [i.e., Minor in Possession (MIP), Public Intoxication (PI), Driving While Impaired (DWI), Driving Under the Influence (DUI), Aggravated DUI, Actual Physical Control (APC) citations, Transporting an Open Container of Alcohol (TOC)] *should*

produce a change in future behavior, yet there has been little research to determine the validity of this assumption. In fact, research suggests that minimal change is maintained in the legal arena, as indicated by reports that between one in five and one in three individuals arrested for an alcohol-related driving offense are rearrested for alcohol related driving offenses (C'de Baca, Miller, & Lapham, 2001; McCarty & Argeriou, 1986). Unfortunately, these recidivism rates likely underestimate the percentage of individuals who continue to drive drunk after a legal consequence (C'de Baca et al., 2001). Although legal encounters may prompt a few individuals to drink and drive less often, little is known about the nature or duration of these, and other, behavioral changes (e.g., changing alcohol use patterns) that may occur subsequent to a legal encounter.

After experiencing a legal encounter, what behavioral changes, if any, occur? Does a person alter the amount and frequency of his or her drinking? Is he or she more careful in order to evade detection or arrest by authorities while drinking (e.g., having a designated driver)? Do both changes occur? The first step in attempting to answer these questions is to develop a valid and reliable assessment of behaviors that put one at risk for legal consequences when drinking. Valid and reliable measures are available to assess changes in alcohol use patterns, but no such measure exists for legal risk behaviors.

Legal encounters might be a way to naturally identify a group of high-risk drinkers who are an appropriate population for whom to deliver targeted intervention. On the other hand, if legal encounters alone result in substantial changes in alcohol use behaviors, then further interventions may be unnecessary. However, if changes occur only in legal risk behaviors, if at all, then legal encounters may be a fruitful method for

identifying high-risk alcohol users likely to benefit from a targeted intervention (Dimeff & McNeely, 2000).

Purpose and Objectives of the Study

The aim of the proposed study is to describe the development and to conduct an evaluation the Legal Risk Assessment (LRA), which is intended to provide a reliable and valid assessment of the relative frequency of legal risk behaviors college students engage in while drinking alcohol. Legal risk behaviors are those actions students may engage in while using alcohol that may put them at increased risk for detection or arrest from legal authorities. The LRA measure was developed in an attempt to represent risky behaviors and protective behaviors in which students may engage while using alcohol. Risky behavior items reflect actions that are likely to attract authorities (e.g., drinking and driving, drinking alcohol and using illicit drugs, engaging in physical fights, etc.). Protective behavior items reflect actions that college students may engage in, in an attempt to decrease the likelihood of attracting authorities (e.g., calling a taxi after drinking, drinking at home, drinking with a small group of people, etc.). Thus, the value of this study is substantial and is expected to yield important information that allows future researchers to investigate the effects that a legal encounter has upon college students' subsequent use of alcohol.

The subsequent chapters will provide a brief review of problems and consequences of collegiate binge drinking. Risk factors associated with engaging in binge drinking during the college years will also be discussed. Finally, a description of the development of the measure and the planned evaluation of the LRA will be reviewed.

CHAPTER II

REVIEW OF THE LITERATURE

Problems and Consequences

Binge drinking by college students often introduces unique negative consequences to the college-age person and his or her peers. In a review and synthesis of the current literature, Perkins (2002) breaks down the negative consequences of binge drinking into three general categories: damage to self, damage to other people, and institutional costs and damages. The damage that students' incur on themselves involves academic, emotional, physical, social, and legal problems. Damage to other people describes the problems that may occur to other students who are drinking, students who are not drinking, and to neighborhood and campus visitors, as a result of collegiate binge drinking. Finally, institutional damages include factors that affect the well-being of the institution.

More specifically, damage to self includes such consequences as academic impairment, blackouts, personal injuries, physical illnesses, unintended and unprotected sexual activity, suicide, sexual coercion and acquaintance rape victimization, impaired driving, legal repercussions, and impaired athletic performance. In a compilation of national reports that examined alcohol-related injury deaths and other health problems among 18-24 year-olds, it was estimated that collegiate alcohol use contributes to 1,400

student deaths, 500,000 injuries, and more than 70,000 incidences of sexual assault or date rape each year (Hingson et al., 2002). Additionally, individuals age 16 to 20 are twice as likely to experience alcohol-involved fatality vehicle crashes as compared with individuals age 21 and older (Yi, Williams, & Dufour, 2001). Similarly high rates of negative consequences have been observed on the Oklahoma State University campus. Researchers sampled 641 students using the Core Alcohol and Drug Survey (CORE) and found that 29% of students sampled reported driving under the influence of alcohol or drugs, while 3.3 % reported experiencing unwanted sexual intercourse when alcohol and/or drugs were involved (Oklahoma State University On-line, 2003). Other conclusions of the CORE survey conducted at Indiana State University suggest that students who received a DUI engaged in binge drinking more often than students who had not received a DUI, although the average number of drinks consumed each week was not significantly different (Borges & Hansen, 1993). Drinking and driving has been implicated as being one of the strongest contributors to morbidity and mortality of adolescents and young adults (Wechsler et al., 2000b). Although not all college drinkers will experience each of these consequences, research suggests that a significant minority of college students on most college campuses experience extensive individual harm due to alcohol consumption (Perkins, 2002). More specifically, 18 to 28% of alcohol using students reported missing class due to using alcohol, while 15-33% of alcohol using students reported performing poorly on coursework (Perkins, 2002).

The negative consequences of binge drinking by college students is not contained exclusively within the individual user of alcohol, rather they are extended to peers,

faculty, neighbors, and visitors. Perkins (2002) categorizes these secondary consequences as damage to others, and within it includes property damage and vandalism, fights and interpersonal violence, sexual violence, and other potential disturbances (e.g. noise disruptions, harassment). For example, results of a survey that was mailed to a random sample of students at 140 colleges revealed that nonheavy-drinking students at high drinking level college institutions (i.e., over 50% of students classified as binge drinkers) were 3.6 to 4.1 times more likely than their counterparts at low drinking level colleges (i.e., less than 35% of students classified as binge drinkers) to experience at least one of eight problems as a result of other students' drinking (Wechsler et al., 1994; Wechsler, Moeykens, Davenport, Castillo & Hansen, 1995). These secondary experiences include: being insulted or humiliated; having a serious argument; being pushed, hit, or assaulted; having property damaged; having to take care of a drunken student; having study or sleep interrupted; experiencing an unwanted sexual advance; or being the victim of a sexual assault or date rape (Wechsler et al., 1994). Wechsler et al. (1998) resurveyed 140 colleges that participated in the Harvard School of Public Health College Alcohol Survey (CAS) and found that 3 out of 4 students reportedly experienced secondary effects of heavy alcohol use. Furthermore, research indicates that over 600,000 full-time students were physically assaulted by a student who was using alcohol (Hingson et al., 2002).

The final category into which Perkins (2002) places negative consequences of collegiate drinking is institutional costs and damages. This category reflects the impact alcohol consumption can have on the administration who handles alcohol-related problems, including increased attrition rates, increased loss of tuition revenue, and

potential legal suits against the institution. Wechsler et al. (1998) found that 11.5% of participants reported having damaged property. Although not specifically stated, it may be inferred that at least some of this property damage occurred on university property. In another study, 53% of administrators at high-level heavy drinking college institutions and 33% of administrators at mid-level heavy drinking college institutions reported damage to campus property as being problematic (Wechsler, Moeykens, Davenport, Castillo, & Hansen, 1995). Clearly, a college student's quality of life, and in some instances life itself, may be compromised by high rates of alcohol misuse and associated negative consequences. It is these issues about which college administrators are concerned, and which renders the study of collegiate alcohol consumption imperative.

The Trajectory of Binge Drinking During College

At one time, many administrators of higher institutions viewed alcohol problems on campus as a developmental stage and chose to ignore alcohol use and associated problems (Presley et al., 2002). This is most likely a result of the so-called "maturing out" effect of heavy alcohol consumption. This effect is a descriptive term reflecting the dynamic nature of alcohol involvement during the college years. For example, using the Monitoring the Future national data, results of a follow-up of 2,400 18-24 year olds revealed that individuals who used alcohol tended to move in and out of binge drinking up to early adulthood, and then experience a decrease in the amount of alcohol consumed thereafter (Schulenberg, O'Malley, Bachman, Wadsworth, & Johnston, 1996). Similar results were found from a longitudinal design in which researchers assessed college students during their freshman year, senior year, and at age 24. Results indicated that

significantly more individuals than not matured out of binge drinking during the transition from freshman year to senior year, and from senior year to age 24 (Jackson, Sher, Gotham & Wood, 2001). Assessment of the prevalence of students diagnosed with Alcohol Use Disorder (AUD) at each year in college and again three years later indicated that throughout the length of the study, a subset of individuals decreased binge drinking, thereby no longer meeting criteria for AUD (Sher & Gotham, 1999). However, another subset increased binge drinking, thus maintaining an AUD diagnosis at each wave of data collection (Sher & Gotham, 1999). Several other researchers have similarly noted that a subset of frequent binge drinkers continued to use (Jackson et al., 2001; Sher & Gotham, 1999) throughout college and were less likely to graduate from college (Schulenberg et al., 1996). Regardless of the findings that most (i.e., 84%) college students mature out of binge drinking, even transitory binge drinking places an individual at an increased risk for experiencing alcohol-related problems during the period of heavy use (O'Neill et al., 2001) and for developing a lasting dependency problem among a subset of young people (Jackson et al., 2001; NIAAA, 2003; Sher & Gotham, 1999). Indeed, using a diagnostic interview, Clements (1999) found that in a sample of 224 college students, 18.3% and 16.3% met criteria for a lifetime diagnosis of abuse or dependence, respectively.

Risk Factors of Binge Drinking

Throughout College

A multitude of factors have been identified which make an individual more likely to engage in binge drinking during the college years. Such factors include: male gender (Baer, Kivlahan, & Marlatt, 1995; Chassin, Pitts, & Prost, 2002), marital status

(Schulenberg et al., 1996), Greek residency (Baer et al., 1995; Presley et al., 2002), a history of conduct problems (Baer et al., 1995), a history of parental and adolescent psychopathology (Chassin et al., 2002), frequent drunkenness after age 18 (Midanik, 1999), impulsivity/sensation seeking (Baer, 2002), antisocial personality traits (Chassin et al., 2002) and family history of alcoholism (Jackson et al., 2001).

Gender

Although gender is a perceived risk of binge drinking, the association between gender and alcohol use is dynamic. For example, a summary of the literature examining the association between alcohol use and gender concludes that in general, the male gender is more often associated with alcohol use than the female gender. However, investigations of the *course* of alcohol involvement and gender are more conflicting (Jackson et al., 2001). Men between the ages of 21-25 initially had higher levels of alcohol use than women, but showed a greater rate of decrease in alcohol use than women (Curran, Muthen, & Harford; as cited in Jackson et al., 2001). Additionally, in a longitudinal study examining alcohol use in young adults, no significant gender differences emerged with respect to the course of alcohol involvement (Pape & Hammer, 1996).

Personality Factors Associated with Alcohol Use

Impulsivity and antisocial personality traits (e.g., social non-conformity) are two aspects of personality which are continually found to be associated with problematic alcohol use. Impulsivity “reflects a tendency to engage in behaviors without proper regard for consequences or inherent risks” (Whiteside & Lynam, 2003, p. 210). Across various ages and types of alcoholism, impulsivity is strongly and persistently associated

with substance use and abuse problems (Hutchinson, Patock-Peckham, Cheong, & Nagoshi, 1998; Sher, Bartholow, & Wood, 2000; Whiteside & Lynam, 2003). Furthermore, impulsivity is related to negative consequences among college students (Baer, 2002) and to later adult problematic alcohol use (Sher & Gotham, 1999). One explanation for the strong relationship between impulsivity and substance use is that “brain systems of behavioral activation, behavioral inhibition, and behavioral maintenance...relate to heritable (i.e., genetic) dimensions of personality...,” such as impulsivity (Howard, Kilvahan, & Walker, 1997; Sher et al., 2000). In essence, similar systems (i.e., behavioral activation, behavioral inhibition, and behavioral maintenance) that are related to impulsivity are also related to one’s genetic propensity to use alcohol (e.g., behavioral undercontrol, which is partially characterized by impulsivity), as suggested by research that reports a familial lineage of alcohol use disorders. The relation between family history of alcohol use disorders, current use of alcohol, impulsivity, and the experience of associated problems is discussed further in the paper.

Antisocial personality traits (ASP) are also highly associated with alcohol use. This relationship is relatively well documented. The essential features of antisocial behavior are described as failing to conform to social norms (especially when lawful behavior is required), engaging in behavior that is grounds for arrest, disregarding other people’s feelings, being deceitful and manipulative, displaying impulsive behavior (e.g., failing to plan ahead, making decisions without regard for consequences), exhibiting a reckless disregard for the safety of other people and oneself (e.g., driving while intoxicated), and being consistently irresponsible (American Psychological Association, 2000).

ASP traits are often measured by assessing the degree of socialization within an individual. Socialization refers to how much an individual has internalized societal values, systems of control, and adaptive mechanisms (Gough, 1994). As an attitude construct, socialization relates primarily to compliance of social norms. Individuals who are less socialized tend to display less guilt when violating social norms, are less enamored by authority and authority figures, and are not as conventional in their behavior as individuals who are more socialized (Shively & Larsen, 2001). In a four year longitudinal study of college students, men who use alcohol and have a positive family history of alcoholism were more likely than women to be diagnosed with ASP (Sher, Walitzer, Wood, & Brent, 1991). Additionally, individuals who endorsed symptoms of ASP during his or her freshman year in college were more likely to develop alcohol use disorders and to develop more symptoms of ASP over time (Sher & Gotham, 1999).

Clearly, some link exists between impulsivity, the degree of ASP, and problematic alcohol use. Although it is evident that some association exists, more empirical support needs to be gathered to delineate the specifics of this association. Impulsivity and ASP are thought to be heritable, to some degree. The notion that these heritable conditions are both linked with alcohol use disorders warrants investigation of how these conditions are linked to each other. Furthermore, the concepts of impulsivity and ASP (e.g., social nonconformity) could be related to the frequency of engagement in risky legal behaviors. Thus, the hypothesis that both personality traits are present in college students needs to be further examined to establish if these constructs can be considered risk factors for engaging in legal risk behaviors.

Family History of Alcoholism

The data suggest that a positive family history of alcoholism (FH+) does not seem to have any effect on *quantity and frequency* of drinking, yet individuals with a family history of alcohol use disorder in first-degree blood relatives *do* appear to have more alcohol problems and more dependency symptoms than individuals without that history (Finn, Sharkansky, Brandt, & Turcotte et al., 2000b; Jackson et al., 2001; Sher et al., 1991). A longitudinal study of adult children of alcoholics found that throughout college, alcohol use disorder and the frequency of binge drinking were associated with a FH+ (Sher & Gotham, 1999). Specifically, patterns of meeting criteria for AUDs among FH+ individuals were categorized as developmentally limited (i.e., individual meets diagnostic criteria for AUD his or her freshman and/or sophomore year in college, but not later), late onset (i.e., individual meets criteria for AUD during junior and/or senior year in college and possibly later in life), or chronic (i.e., individual meets criteria for AUD more often than not during and after college; Sher & Gotham, 1999). This research suggests that FH+ individuals are more vulnerable to meeting criteria for AUD throughout the college years, despite demonstrating similar drinking patterns (i.e., quantity and frequency) of FH- individuals.

FH+ individuals are “less likely to regress from high- to moderate-effect drinking than those without such a history” (Jackson et al., 2001, p. 387). FH+ may actually prevent the maturational effects away from heavy drinking during the college years due to some biological contribution. One possible biological contribution is behavioral undercontrol (i.e., impulsivity, poor self-control, and behavioral deviancy), which is

partially heritable (Finn et al., 2000b). Behavioral undercontrol is directly associated with alcohol problems and is influenced by FH+. FH+ individuals appear to have fundamental deficits in areas of the brain that are associated with behavioral undercontrol (Finn et al., 2000b), which seem to prevent an individual from responding to the threat, or actual occurrence, of negative events (Finn, Ramsey, & Earleywine, 2000a). Thus, it is proposed that individuals exhibiting behavioral undercontrol “have difficulties learning to drink responsibly (e.g., without neglecting responsibilities, being disruptive, or harming themselves or others) because of fundamental deficits in their ability to appropriately regulate their behavior (Finn et al., 2000b, p.123).”

If FH+ is an important risk factor for college students’ inability to mature out of binge drinking due to genetic biological deficits, then more aggressive prevention and intervention efforts may be warranted for this population. Given that FH+ individuals have a heritable disposition for behavioral undercontrol, these individuals may indeed be categorized as “high-risk” on the LRA and may be more likely to experience legal and personal consequences associated with alcohol use.

Prevention

Binge drinking by college students is a highly recognized concern of college administrators. Numerous efforts have been made to prevent the occurrence of binge drinking, such as providing alcohol education, prohibiting access to alcohol, limiting the amount of alcohol advertisements, providing alcohol-free living space, and investing in other prevention strategies (Wechsler, Kelley, Weitzman, San Giovanni, & Seibring, 2000). In a nationwide survey of college administrators regarding prevention efforts of

binge drinking on campus, “the degree to which college administrators perceived student alcohol abuse as a problem was positively associated with the comprehensiveness of institutional education and prevention programs (Wechsler et al., 2000a, p. 223).” Thus, efforts are being made to curb students’ binge drinking, especially when the problem seems severe and education and prevention efforts are less than maximal.

Prevention efforts can be categorized as primary (i.e., universal) or secondary (i.e., indicated or identified). Primary preventions direct efforts to prevent or delay the onset of a problem to all members of a population, regardless of risk (Dimeff & McNeely, 2000). Primary preventions would include alcohol education, media campaigns, restrictions of alcohol possession or use, restrictions on alcohol advertisements, and residential options, such as alcohol-free dormitories (Wechsler et al., 2000a). Research suggests that some educational-based primary preventions result in decreases in drinking, although they are less effective when compared to other prevention efforts such as skills or attitudinal-based preventions, which represent secondary preventions (Bennett, 2000).

Secondary, or indicated, preventions direct efforts at individuals who are thought to be at risk for developing a problem or who have already been identified as having a problem (Dimeff & McNeely, 2000). Examples of secondary preventions include assessing for patterns of recent use and the experience of negative consequences due to alcohol use. Two approaches to secondary prevention strategies, skills training and brief motivational enhancement interventions, have been empirically tested. Considerable evidence exists for the efficacy of both of these interventions (Baer, Marlatt, Kivlahan,

Fromme, Larimer, & Williams, 1992; Bien, Miller, Tonigan, 1993; Kivlahan, Marlatt, Fromme, Coppel, & Williams, 1990; Walters & Bennet, 2000).

The goal of preventative interventions for collegiate alcohol consumption is to prevent the onset, or decrease the risk of individuals already identified as engaging in binge drinking. Although college students may mature out of problematic drinking, even students for whom problematic drinking is a temporary developmental perturbation incur significant acute risks during the college years. Furthermore, there is a subset for whom alcohol consumption is likely to continue at a problematic level after college. Thus, efforts to combat the probability of these individuals moving along a trajectory of alcohol abuse or dependence is warranted. In order to deliver effective secondary preventions, methods to identify high-risk individuals are required.

Limitations of Previous Research

A substantial amount of data is available regarding the consequences of collegiate binge drinking. Furthermore, knowledge about how to prevent negative consequences of binge drinking is available and researchers are motivated to continue the search for even more effective prevention efforts. However, prevention efforts typically focus on ameliorating the interpersonal and intrapersonal consequences of binge drinking and neglect potential legal ramifications that may accrue due to binge drinking. Specifically, little is known about whether current prevention strategies are effective in reducing behaviors that could cause legal problems, such as drinking and driving. The lack of research in this area is alarming considering that approximately 56% percent of male, heavy drinkers and 43% of female, heavy drinkers drive while intoxicated (Engs,

Diebold, & Hanson, 1996). Even more alarming is the report that only two percent of those students are arrested for drinking and driving (Presley, Meilman, & Cashin, 1996).

It is unclear why prevention research and collegiate alcohol use research has neglected this important area. Perhaps not having adequate measures to assess the likelihood of an individual to experience legal problems has reduced the motivation for studying a low base rate behavior, such as being arrested for alcohol-related driving offenses. In order to better understand how to make current prevention strategies more effective, it is necessary to understand the population that we are seeking to help. Measures which gauge a college student's level of risk for engaging in behaviors that are likely to attract authorities, and in turn, are likely to result in negative legal consequences (e.g., being arrested for Minor in Possession, Driving Under the Influence), are desperately needed. These measures could help narrow the focus of prevention efforts by identifying what prevention interventions would potentially be most effective. Clearly, the use of prevention efforts needs to appropriately match an individual's need for service, otherwise, the effectiveness of these efforts may be diminished. Appropriately matched prevention strategies may help reduce dangerous, and even life-threatening, behaviors (e.g., drinking and driving).

It is expected that after experiencing a legal encounter an individual changes his or her behavior. Indeed, that is the point of social sanctions for undesirable behavior. However, little is known about what changes, if any, actually occur. Does a person alter his or her drinking habits? Is he or she more careful about what kinds of behaviors he or she engages in while drinking in order to avoid attracting legal authorities (e.g., drinking

with a small group of people)? Do both changes occur? These are questions are not addressed in the current research. Attempting to answer these questions first requires a valid and reliable assessment of behaviors that put one at risk for legal consequences when drinking. Although adequate measures exist to assess changes in alcohol use patterns, no such measure exists to assess changes in legal risk behaviors.

The Present Study

The goal of the present study is to conduct an evaluation of a new measure of alcohol-use related legal risk behaviors, the Legal Risk Assessment or LRA. This study will assess the psychometric properties of the LRA including the factor structure, test-retest reliability, internal consistency, and convergent and discriminative validity. The LRA was created with the intent to reliably measure legal risk behavior to evaluate a subset of behaviors possibly affected by an aversive legal encounter related to alcohol use.

The development of the LRA consisted of generating items that represent a number of behaviors that college students may engage in while using alcohol that increase or decrease their risk of experiencing a legal encounter. Items reflect an individual's choice in drinking in a variety of social contexts, choice in transportation issues, choice in drinking in a variety of other contexts (e.g., drinking where other drugs are being used), and choice in engaging in illegal behaviors (e.g., using false identification). These items were reviewed by individuals who were familiar with the current study and compared and expanded in accordance with the results of Kulick and Rosenberg's (2000) study of strategies used and reasons why college students do or do not drink and drive. The items are believed to cluster into two groups: one group reflecting risky behaviors and a second

group reflecting protective behaviors. These groups are not expected to be orthogonal. The items generated are behaviors that should be moderately associated with both the experience of negative alcohol-related consequences and the constructs of impulsivity and socialization. These behaviors are believed to be relatively independent of the quantity and frequency of alcohol use and with socially desirable responding. LRA items are expected to be moderately to highly correlated with each other.

In order to evaluate this measure, college students who drink alcohol will be recruited. Recruitment will be conducted through the psychology and marketing department subject pools. The study will be conducted via the internet and will be available for a two week time period. All participants will complete a demographic questionnaire, a measure of family history of alcoholism, negative alcohol-related consequences, frequency and quantity of alcohol use, legal risk behaviors (LRA), socialization, impulsivity, and social desirability.

The following hypotheses are proposed:

1. The LRA will consist of two correlated factors, a risky behaviors factor and a protective behaviors factor.
2. The Risky Behaviors Scale (RB) and the Protective Behaviors Scale (PB) from the LRA will exhibit adequate internal consistency, as evidenced by acceptable alpha coefficients.
3. RB and PB scores will demonstrate adequate one week test-retest reliability, as indicated by moderate to high positive correlations.

4. The RB and PB scores from the LRA will exhibit adequate convergent validity, as evidenced by moderate positive and negative correlation coefficients, respectively, on measures of alcohol-related negative consequences, impulsivity, and socialization.
5. RB and PB LRA scores will exhibit adequate discriminate validity, as evidenced by moderate to low correlation coefficients on measures quantity and frequency of drinking alcohol and social desirability.
6. RB LRA scores will moderately correlate in a positive direction with a positive family history of alcoholism, while PB scores on the LRA will moderately correlate in a negative direction.

CHAPTER III

METHOD

Research Participants

Researchers will recruit 500 male and female college students who use alcohol and are over 18 years of age. Participants considered for inclusion in the study must be college students and must consume alcohol at least occasionally. Participants will be recruited through oral solicitation from Oklahoma State University's psychology and marketing department's subject pool. A recruiter will attend sections of psychology and marketing courses and distribute information about the study, including information about how to access the study. In the event that a recruiter cannot attend a course, the instructor of the course will be asked to distribute the study information.

Because participants will be recruited through the subject pool, individuals who chose to participate in the study will earn one unit of research credit towards completion of their research participation points. Individuals who chose not to participate in the study will have comparable alternative options to earn research credit made available from their instructors.

Research Measures

Demographic Questionnaire

A questionnaire was designed for the present study to obtain information regarding the participant's age, gender, ethnicity, year in college, current cumulative GPA, Greek

membership, marital status, residency, family income, and an assessment of previous encounters with legal authorities that did or did not result in arrest. (See Appendix B).

Assessment of Family History of Alcoholism

A single global question (“Do you think your biological father/mother is (was) an alcoholic?”; response options: Yes/No) is used to determine parental alcoholism. Research has shown that a single, global question is just as reliable and valid as traditional assessment measures of family history of alcoholism (Crews & Sher, 1992; Cuijpers & Smit, 2001). Specifically, Crews and Sher (1992) assessed the predictive validity of the single item against a cutoff score on the adapted version of the Short Michigan Alcohol Screening Test, which was used to examine father’s and mother’s alcohol abuse (F-SMAST and M-SMAST, respectively). Results revealed satisfactory statistics for both fathers and mothers (sensitivity = 0.65, 0.55; specificity = 0.87, 0.99; Kappa = 0.51, 0.61; and criterion validity = 0.82, 0.82). Analysis of the single item assessment revealed excellent test-retest reliability, high agreement between siblings, and moderately high agreement with parent’s self-rating of problematic drinking (Crews & Sher, 1992).

Cuijpers and Smit (2001) also asked a similar single global question to assess parental alcoholism (Does/did your natural father/mother ever have a problem with drinking (yes or no)?) and found similar satisfactory results (Specificity = 0.91, Kappa = 0.83, and Y = 0.78). (See Appendix C).

The College Alcohol Problems Scale-revised (CAPS-r)

The College Alcohol Problems Scale-revised (CAPS-r; Maddock, Laforge, Rossi, & O'Hare, 2001) is an eight item instrument that assesses drinking-related negative consequences. The CAPS-r was derived from the original CAPS, a twenty-item questionnaire (Maddock et al., 1997).

The CAPS-r, which corresponds closely to the original measure ($r = .94$), is more robust than the original CAPS for two main reasons: (a) it was developed using a representative sample of college students, thereby making future research and prevention efforts that utilize the CAPS-r more applicable and (b) the measure was developed using split-half techniques and Structural Equation Modeling (Maddock et al., 2001). The measure consists of eight items that load on two factors - personal problems and social problems of alcohol use. Cronbach's coefficient alpha for the personal problem subscale was .78 and was .73 for the social problems subscale. The two factors are correlated at .46, reflecting that these two factors are related but independent (Maddock et al., 2001). (See Appendix D). Response options are as follows: Never, Yes, but not in past month (year), 1-2 times, 3-5 times, 6-9 times, 10 or more times.

Frequency-Quantity Questionnaire (FQQ)

Using an adapted measure from Cahalan and Cisin (1968), researchers of the Brief Alcohol Screening and Interventions for College Students (BASICS; Dimeff, Baer, Kivlahan, & Marlatt, 1999) designed an instrument to assess college students' typical drinking habits. Specifically, the FQQ is a self-report questionnaire that assesses the maximum amount of alcohol an individual consumed on one occasion during the

previous month (response options: Not at all, 1-2, 3-4, 5-6, 7-8,9-10, 11-12, 13-14, 15-16, 17-18, 19 or more). It also assesses the quantity of alcohol typically consumed during a weekend evening (response options: same as above), and how often an individual drank over the course of the previous month (response options: Not at all, About once per month, 2-3 times per month, 1-2 per week, 3-4 times per week, Nearly every day, One or more times a day; Dimeff et al., 1999). The FQQ takes approximately 2 minutes to administer.

Frequency and quantity methods are widely used and allow for an expedient assessment of alcohol consumption habits (Dimeff et al., 1999). An advantage of using the FQQ is that the period during which participants are asked to recall their drinking habits is limited to one month, compared to other measures, which often have a recall period of one year (Midanik, 1999). (See Appendix E).

Legal-Risk Assessment (LRA)

The LRA is a 30-item self-report measure designed to assess the frequency of the occurrence of legal-risk behaviors of college students who consume alcohol. Response options are as follows: Never, Rarely, Many Times, Always. Legal risk behavior items are thought to reflect behaviors that a college student engages in while using alcohol which may put him or her at increased risk for detection or arrest from legal authorities and protective behaviors that reduce the likelihood of attracting authorities.

Risky behavior items reflect behaviors in which an individual engages that increase the likelihood of attracting authorities, such as drinking and driving, drinking while using illicit drugs, or drinking at a “house party.” Protective behavior items were designed to

reflect behaviors in which an individual engages to reduce the likelihood of attracting authorities, such as calling a friend or a taxi for a ride, drinking at home, and drinking with a small group of people.

The LRA is hypothesized to yield two scores, a risky behavior and a protective behavior score. Risky and protective scores are believed to reflect relative frequency of behaviors that increase risk for alcohol-related legal consequences (“risky behaviors” and behaviors that should reduce the likelihood of alcohol-related legal consequences (“protective behaviors”).

Several methods of scoring the LRA will be explored in this study. The LRA was designed as a tool to compare the legal risk behaviors within an individual across time. Reductions in risky behavior or increases in protective behavior are hypothesized to indicate adaptive changes following a legal encounter, which is intended to reduce the likelihood of future legal encounters. (See Appendix F).

California Personality Inventory Socialization Scale (CPI-So)

The CPI-So is a 46-item self-report measure with a true/false answer format. The CPI-So is a widely used measure of antisocial personality disorder (APD) that distinguishes between delinquent and nondelinquent male and female samples (Edelmann & Vivian, 1988; Goma-i-Frexanet, 1995; Gough, 1994). The measure is intended to assess the continuum of psychopathology, which, on one extreme is reflected by social compliance to norms, while the other extreme is reflected by unconventional and nonconformist behavior (Gough, 1994). The CPI-So consists of four factors: (1) Optimism, Self-Confidence, and Positive Affect, (2) Self-discipline and Cathexis of

Social Norms, (3) Good Memories of Home and Parents, and (4) Interpersonal Awareness and Sensitivity. Test-retest reliability is reported to range between .65 and .80 for intervals up to one year (Edelmann & Vivan, 1988). Additionally, the CPI-So is reported to have adequate predictive validity and classificatory power to distinguish delinquents from nondelinquents (Gough, 1994). Published norms are available for college students. Low scores tend to describe individuals who are rebellious, impulsive, headstrong, and unchanging, while individuals who score high on the CPI-So are described as being organized, conscientious, conservative, dependable, and ethically consistent (Gough, 1994). (See Appendix G).

Eysenck Impulsiveness Questionnaire (I₇)

The I₇ is a 54-item self-report measure with a yes/no answer format. The I₇ consists of three factors: impulsiveness, venturesomeness, and empathy. Reliabilities for the impulsiveness, venturesomeness, and empathy factors are .84, .85, and .69, respectively (Eysenck et al., 1985). Published norms are available for college students. (See Appendix H).

Marlowe-Crowne Social Desirability Scale Short Form (MC-SDS)

The MC-SDS is a 13 item self-report measure with a true/false response format. The MC-SDS is useful in evaluating the impact of social desirability on self-report responses (Reynolds, 1982). Reliability estimates of the MC-SDS are reported to be .82, with inter-item correlations ranging from .13-.49 (Reynolds, 1982). The MC-SDS is an appropriate measure of socially desirable responding because it has been found to measure both types

of biased responding, self-deception and impression management (Paulhus, 1986). (See Appendix I).

Research Procedure

Participants will be asked to complete the study in one session over the internet. The session will consist of completing of all the measures and is expected to take approximately 30-45 minutes to complete. Individuals who are interested in participating in the study will be asked to read and sign an on-line consent form (See appendix A). Individuals will be informed that they do not have to participate and that they may withdraw their participation at any time during the course of the study. Individuals will also be informed that nonparticipation or withdraw does not qualify them for receipt of a unit of research credit that they could earn through participation in the study, although alternative options to earn this credit will be made available to them by their course instructor.

After agreeing to the conditions of the study, participants will be directed to the first study session. The session will consist of individuals completing the following measures: demographic, family history of alcoholism, alcohol-related negative consequences, frequency and quantity of alcohol consumption, frequency of engagement in legal risk behaviors, socialization, impulsivity, and social desirability.

On the demographic measure, participants will be asked to create a unique code number that will be used to later match their data with their name, which is given separately at the conclusion of the study (see paragraph below). This identification process is necessary so that future analyses on the LRA, which are not part of this project,

can be conducted. The participant's code number and his or her name will be kept separate from the computer data and will be accessible only to the researchers of this study.

After completing all the measures, participants will be directed to a separate page on which they will again provide their unique code number, as well as their email address so that they can be contacted for the follow-up portion of the study that would take place one week after initial participation.

One week after completion of the study, individuals who offered their email addresses will be contacted via email and asked to participate in a follow-up session of the study. Consent for the follow-up will be included in the consent form for the initial study. Participants will be asked to complete the LRA a second time, to allow researchers to gather test-retest data. The follow-up study will take approximately ten minutes to complete. Participants will be directed to a separate page where they will be asked to record their unique code number, name, and class information. This information will be used to provide a list of participant names to instructors so that participants can earn research credit. Instructors will not have access to the participant's unique code number or their data. Upon completion of the study, referral information will be made available for participants who experience exacerbated emotional reactions or for individuals who would like to consider professional assistance for their alcohol consumption or problems related to their alcohol consumption (See Appendix J).

CHAPTER IV

RESULTS

A main objective of this study was to determine the psychometric properties of the LRA. The following analyses were conducted to examine the factor structure, reliability, and construct validity of the new measure. Two hundred and fifty participants participated in the initial phase of the study. Preliminary analyses were conducted to examine the descriptive properties of items (e.g. mean, variance, standard deviations) and to determine if the data met established response specifications (e.g., minimum and maximum responses, range of responses, missing data). Participants who had more than 80% of data missing or out of range were excluded from all subsequent analyses. Eighteen individuals had a significant amount of missing data and were excluded from the sample. Individuals who had less than 20% missing data were retained for analyses. Thus, the final sample consisted of 232 individuals.

Participants

The internet survey was completed by 232 participants, including both men ($n = 73$, 31.5%) and women ($n = 159$, 68.5%). The mean age of participants was 20.1 (SD = 2.9) and ranged from 17 to 48. The majority of participants were under the age of 21 ($n = 159$, 68.5%). Most participants described themselves as Caucasian ($n = 198$, 85.3%) and reported their college enrollment status as freshman ($n = 99$, 42.7%). Sixty-three (27.2%) participants reported being a member of a social sorority or fraternity. Most ($n = 220$,

94.8%) participants reported having never been married. The most common living situation was residing in on-campus housing ($n = 110$, 47.4%). Demographic characteristics of this sample were similar to the Oklahoma State University (OSU) campus, with 54% of the students on campus being female, 92.5% of students on campus report being unmarried, and 45% of students living on campus (OSU, 2003). A substantial number of underage participants reported binge drinking in the past month ($n = 113$, 71.1%) while only 50.7% ($n = 37$) of legal age participants reported binge drinking in the past month. Sixty-five (40.9%) underage college students and 24 (32.9%) legal age college students reported binge drinking on a typical weekend within the past month.

Participants were asked whether they had experienced an encounter with legal authorities related to their alcohol use in the past year. A total of 31 (5.1%) participants experienced some type of legal encounter within the past year (underage, $n = 23$, 9.9%, legal age, $n = 8$, 3.4%). Of the total sample, 30 participants (12.9%) reported a legal encounter that did not result in arrest while only five (2.2%) reported a legal encounter that did result in arrest. Participants were asked if they had been charged with an alcohol-related offense in the past year, and if so, to report the nature of the charge. Reported charges included Minor in Possession, ($n = 2$, .9%), Driving Under the Influence ($n = 1$, 0.4%), and Actual Physical Control ($n = 1$, 0.4%). Two (0.9%) participants reported receiving a citation for another type of charge. No participants reported being charged with Public Intoxication, Using False Identification, or Transporting an Open Container of Alcohol. Table 1 displays a further breakdown of demographic data.

Primary Analyses

The goal of this study was to determine the psychometric properties of the LRA. Thus, the items of the measure were initially subjected to factor analysis and the internal consistency of the resulting factors was examined. Additionally, the measure was examined to determine two week test-retest reliability and convergent and discriminate validity with other variables typically related to collegiate alcohol use. The following section describes the analyses conducted and the statistical findings.

Hypothesis 1

The LRA will consist of two correlated factors, a risky behavior factor, and a protective behavior factor.

Prior to analyzing the factor structure of the LRA items the descriptive and distributive properties of each item were examined. Five items were not included in any of the analyses because of extremely low variability in participant responses. Descriptive statistics and box plots for individual items were examined and items that had low variability were excluded from all subsequent analyses. Due to extremely low rates of endorsement of these behaviors, these items did not appear to be useful in contributing to the utility of the measure and were excluded from further analyses. Excluded items included: (1) drinking by yourself, (2) using illegal drugs while drinking, (3) using false identification to gain access to a bar or club, (4) taking public transportation, and (5) using false identification to purchase alcohol. The means, standard deviations, and variance for these LRA items and the other items are presented in Table 2.

A Principle Components Analysis (PCA) and Principle Axis Factor (PAF) Analysis with direct oblimin rotation were conducted on the remaining twenty-four items. The data were analyzed “listwise” to guarantee an equal number of responses for each item. Thus, only 221 individuals were included in this analysis. Items included in these analyses are presented in Table 3. Loadings $\geq .40$ on one factor and $\leq .30$ (and with a difference of $\geq .20$) on the other factors were considered clean loadings (Tabachnick & Fidell, 1996). Initial analyses based on eigenvalues greater than one and factor loadings revealed an eight-factor solution using PCA that accounted for a total of 77.72% of the variance. A five-factor solution using PAF accounted for a total of 52.45% of the variance. However, neither solution was theoretically interpretable. In other words, items that were considered to theoretically clustered together did not load on the same factor and some factors consisted of only one or two items. Examination of the scree plots of the eigenvalues suggested a three-factor solution (Russell, 2002; see Figure 1). When examining scree plots, one looks for a break in the eigenvalues such that a visible drop is evident. The number of factors that exist before this break represents the number of factors that are present (Russell, 2002). Thus, although both PCA and PAF factor solutions were similar, the PCA factor structure was interpreted. PCA provides a mathematically unique solution that takes into account the correlations between variables, the unique variance, and the error variance. Further, PCA is recommended for reducing item variables to more parsimonious components (Tabachnick & Fidell, 1996).

Three factors accounted for 46.0% of the total variance. Individually, the first factor accounted for 23.8% of the variance, while the second and third factor accounted for

13.4% and 8.8% of the variance, respectively. LRA items and structure matrix factor loadings are displayed in Table 3. Seventeen items were retained based on interpretation of the structure matrix. Seven items loaded on more than one factor and were not included in the final interpretation of the solution (see Table 4). The first factor consisted of nine items and illustrated *risky drinking* situations and included items such as drinking “with one or more persons likely to get into physical fights while drinking alcohol,” “drive yourself after drinking,” and “ride with a driver who had been drinking.” The second factor consisted of five items and illustrated *safe travel* situations. Factor 2 contained items such as “have a designated non-drinking driver drive you to another location,” “plan ahead so that you wouldn't have to drive after drinking” and “let someone else who had not been drinking at the drinking location drive instead of driving yourself.” Factor 3 consisted of three items and illustrated *private drinking* situations with items such as drinking “in your home,” “with a small group of friends or family,” and “drinking in a private setting that did not require you to travel.” Using the results of the PCA, subscale scores were created by using a “coarse” scoring strategy (Grice, 2001). Using this strategy, observed scores of items that load on each factor were summed to create a subscale score. Items that did not load on a factor or that exhibited high cross loadings were ignored. Correlations between subscale scores (see Table 5) were not significant, indicating that the factors are relatively orthogonal.

Scree plot data from the factor analysis did not support a two factor solution. Examination of the scree plots obtained from testing different factor solutions indicated that three factors were present. A four factor PCA solution explained 53.16% of the total

variance. The fourth factor explained only 1.55% more variance and did not contribute unique information about the theoretical interpretation of the measure. Thus, the inclusion of a third factor is logical because it includes important items reflecting private drinking behaviors that are unique to the other factors and that are not accounted for in a two factor solution. Therefore, results of a PCA provided only partial support for the hypothesis that the LRA would consist of only two factors. The first factor reflects the expected RB scale and includes items that should increase risk for legal consequences while drinking. The expected PB factor was better represented by two relatively orthogonal factors reflecting strategies for safer travel while drinking alcohol and using alcohol in more private settings.

Hypothesis 2

The Risky Behaviors (RB) and Protective Behaviors (PB) Scale from the LRA scores will exhibit adequate internal consistency, as evidenced by an acceptable alpha coefficient.

Analyses indicated that the LRA consisted of three factors. Thus, reliability analyses were conducted on the three factors, rather than the two factors that were hypothesized. Reliability analysis revealed the following alpha coefficients: Risky Drinking Subscale $\alpha = .82$, Safe Travel Subscale $\alpha = .80$, and Private Drinking Subscale $\alpha = .65$. The alpha coefficient for the first two LRA subscales meet or exceed the minimal standard of .80 (Cronbach, 1951). However, the alpha coefficient for Private Drinking appears at first to be unacceptably low. One possible explanation of the low alpha coefficient is the fact that this scale consisted of only three items. The alpha coefficient is contingent upon the

number of items in a scale. With short scales, the Spearman-Brown formula can be used to estimate what level of alpha might be observed if the scale included more items with similar inter-item correlations (Anastasi, 1988). Applying the formula to the Private Drinking subscale reveals that the alpha coefficient would increase substantially if the scale had six items (estimated $\alpha = .78$) or nine items (estimated $\alpha = .84$). Thus, the three LRA subscales demonstrated acceptable levels of internal consistency.

Hypothesis 3

RB and PB scores will demonstrate adequate one-week test-retest reliability, as indicated by high positive correlations.

All participants were asked to complete part 2 of the study, which required completion of LRA items between one and two weeks after the initial data collection. One hundred and thirty seven participants completed Part 2, however, four of these participants were excluded from the analyses because they were missing a significant amount of data in Part 1. Thus, only 133 of these participants were retained for test-retest analysis. Data for both the participants who did and did not complete the retest are available in Table 6.

Chi-square and independent samples t-tests were used to examine potential differences that may have existed between these two groups. Significant differences were no observed in regards to gender, age, ethnicity, college enrollment status, greek membership, marital status, or residency. The retest sample did report experiencing significantly more alcohol-related negative consequences for the past month ($t(??) = -2.653, p < .01, d = .??$) and for the past year ($t = -2.195, p = .02$) compared to participants

who did not have retest data. These two groups did not differ significantly on measures of socialization, impulsivity, social desirability, or quantity and frequency of alcohol use. Thus, the demographic characteristics of the sample who completed Part 2 of the study are similar to the total sample, with the exception of the retested sample reporting greater alcohol-related consequences.

Participants were contacted via email one week after initial participation and allowed one week from the time of the email to return to the website and complete the LRA a second time. Test-retest correlations for *Risky Drinking* ($r = .87, p < .01$), *Safe Travel* ($r = .75, p < .01$), and *Private Drinking* ($r = .71, p < .01$) were positively and significantly correlated. Table 6 displays the test-retest correlations between LRA subscale scores. As hypothesized, the LRA exhibited adequate test-retest reliability, suggesting that responses to this measure are relatively stable across a two week time period.

Hypothesis 4

RB and PB scores will exhibit adequate convergent validity, as evidence by moderate positive and negative correlation coefficients, respectively, on measures of alcohol-related negative consequences, impulsivity, and socialization.

Bivariate correlations between the three LRA subscales and alcohol-related negative consequences, impulsivity, and socialization were examined. Complete data on all measures was available from only 232 participants. Risky Drinking scores were significantly correlated with alcohol-related negative consequences reported for the past month ($r = .48, p < .01$) and for the past year ($r = .44, p < .01$), as well as general level of impulsivity ($r = .18, p < .01$). Even when the potential confounding construct of

impulsivity was statistically controlled via partial correlations, there were no substantial changes in the correlations or the significance levels between Risky Drinking and alcohol-related negative consequences for the past month ($r = .45, p < .01$) or for the past year ($r = .41, p < .01$). Risky Drinking scores were not significantly correlated with general level of socialization.

Analyses did not indicate support for the hypothesis that Safe Travel and Private Drinking scores were negatively and moderately correlated with alcohol-related negative consequences, impulsivity, and socialization. Safe Travel was not correlated with any of the above measures. Analyses revealed that Private Drinking scores were positively and significantly correlated with alcohol-related negative consequences for the past month ($r = .13, p = .03$) but not for the past year. Additionally, Private Drinking scores were not significantly correlated with general level of impulsivity or general level of socialization. See Table 7 for the correlation matrix of LRA subscale scores and alcohol-related negative consequences (for the past month and year), impulsivity, and socialization. Thus, hypothesis 4 was only partially supported by observations of significant correlations between Risky Drinking scores and alcohol-related negative consequences for the past month, past year, and general level of impulsivity. Additionally, it was demonstrated that Private Drinking scores were only correlated with alcohol-related negative consequences for the past month.

Hypothesis 5

RB and PB scores will exhibit adequate discriminate validity, as evidenced by moderate to low correlation coefficients on measures of quantity and frequency of

drinking alcohol and social desirability.

Bivariate correlations between the three LRA subscales and quantity and frequency of drinking alcohol and social desirability was examined. Complete data on all measures was available from 232 participants. Risky Drinking was moderately and significantly correlated with peak drinking in the past month ($r = .56, p < .01$), typical amount of drinking in the past month ($r = .49, p < .01$), frequency of drinking in the past month ($r = .58, p < .01$), and the frequency of getting intoxicated in the past month ($r = .54, p < .01$). As hypothesized, Safe Travel was significantly correlated with peak drinking in the past month ($r = .17, p < .01$) and typical amount of drinking in the past month ($r = .14, p = .03$). Safe Travel was not significantly correlated with frequency of drinking in the past month or frequency of getting intoxicated in the past month. Private drinking was significantly correlated with frequency of drinking in the past month ($r = .19, p < .01$), but was not significantly correlated with peak drinking in the past month, typical amount of drinking in the past month, or frequency of getting intoxicated in the past month.

Partial correlations were conducted to determine the influence of impulsivity on the relationship between the three factors and quantity and frequency of alcohol use. These analyses did not reveal significant discrepancies compared to the zero-order correlations. Only slight differences in the magnitude of the correlations were exhibited for peak drinking in the past month (Risky $r = .54$, Safe $r = .15$, Private $r = .08$), typical amount of drinking in the past month (Risky $r = .47$, Safe $r = .12$, Private $r = .10$), frequency of drinking in the past month (Risky $r = .56$, Safe $r = -.02$, Safe $r = .19$), and the frequency of getting intoxicated in the past month (Risky $r = .53$, Safe $r = .06$, Private $r = .06$).

As expected, none of the correlations between LRA factors and social desirability approached significance (r 's = .02, .01, .09). The correlations between factor scores, quantity and frequency of drinking alcohol, and social desirability are presented in Table 8. In conclusion, the discriminate validity of the LRA was partially demonstrated by the correlations between Risky Drinking scores and measures of quantity and frequency of alcohol use and between Safe Travel scores and quantity of alcohol use. Private drinking was correlated with frequency of drinking in the past month only.

Hypothesis 6

RB LRA scores will moderately correlate in a positive direction with a positive family history of alcohol, while PB scores on the LRA will moderately correlate in a negative direction.

Bivariate correlations between the three LRA subscales and family history of alcoholism were examined from a sample of 232 participants and revealed no significant correlations. Table 9 displays the correlations between these factors. LRA factors were not significantly correlated with family history of alcoholism.

Additional Analyses

Additional analyses were conducted on the subset of participants who reported experiencing a legal encounter in the last year. Table 10 displays demographic characteristics and test results of this subset compared to the rest of the sample. A chi – square analyses was conducted and indicated that men were more likely to report experiencing a legal encounter than women. Additionally, when participants were grouped into “caucasian” versus “other ethnicity” and “never-married” versus “other,”

analyses indicated that those who experienced a legal encounter in the past year were likely to be caucasian and never married. Participants in their sophomore and junior years of college were more likely than those in their freshman and senior years in college to report experiencing a legal encounter in the past year. Participants who reported being a member of a social sorority or fraternity were more likely to experience a legal encounter. Participants who reported living off campus with a roommate and those living in a sorority or fraternity house were more likely to report experiencing a legal encounter in the past year compared to those participants in other living arrangements. A substantial number of these participants reported binge drinking in the past month ($n = 28, 90.3\%$) and on an average weekend evening in the past month ($n = 15, 48.38\%$). The majority of these participants reported drinking six times in the last month ($n = 12, 38.7\%$) and reported drinking to get drunk 1.5 times in the past month ($n = 13, 41.9\%$).

An independent samples t-test indicated that individuals who reported experiencing a legal encounter in the past year reported significantly higher rates of risky drinking behavior but not safe travel or private drinking behavior. Individuals with a history of a legal encounter also reported significantly more alcohol-related negative consequences and greater impulsivity. Independent samples t-tests also indicated that the legal encounter group reported significantly higher mean scores on measures of typical amount of drinking in the past month, frequency of drinking in the past month, and the frequency of getting intoxicated in the past month but not on peak drinking in the past month. Thus, analyses demonstrate that college students who experienced a legal encounter in the past year engage in more risky behaviors, are more impulsive, experience more difficulties

related to alcohol use, and drink in higher quantities and more often than college students who have not experienced a legal encounter in the past year.

CHAPTER V

DISCUSSION

The aim of the current study was to describe the development of the Legal Risk Assessment (LRA), which was intended to measure behaviors that put an individual at an increased risk of experiencing legal consequences when using alcohol. A second objective of this study was to conduct an evaluation of the psychometric properties of the LRA. The factor structure, internal consistency, test-retest reliability, and convergent and discriminative validity of the LRA were examined.

Overall, the initial findings suggest that the LRA may be a valid and reliable measure of alcohol-related legal risk behaviors. Results indicated that the LRA consisted of three factors: Risky Drinking, Safe Travel, and Private Drinking. The LRA was found to be a reliable measure, demonstrating both adequate internal consistency and test-test reliability. Participants' responses were free of distortion due to social desirability. The validity of the LRA was partially demonstrated by identifying types of drinking behaviors (risky, safe, and private) that are relatively distinct from quantity and frequency of alcohol use. Thus, the LRA appears to have adequate initial psychometric properties that support its further use and evaluation.

These finding suggests that individuals who engage in one type of legal-risk behavior are likely to engage in all types of risky behavior to a greater degree. However, individuals appear to be more selective in their choice of protective behaviors, choosing

to either arrange for safe transportation or limit themselves to more private settings. Use of one of these protective strategies is apparently unrelated to using the other. This important distinction between protective behaviors is further supported by the association between the private drinking factor, but not safe travel factor, with alcohol-related negative consequences that occurred in the past month. It is possible that recently experiencing alcohol-related negative consequences resulted in behavior changes that are consistent with private drinking patterns. However, this observation implies that private drinking situations still maintain the potential for alcohol-related harm to occur. It is also possible that individuals who drink privately could exhibit psychological difficulties (e.g., depression or anxiety) that increase the likelihood of experiencing more difficulties when they are using alcohol. Further research should investigate the psychological functioning of college students who have experienced an alcohol-related legal encounter. As expected, the quantity and frequency of alcohol use was related to engaging in risky behaviors. This effect is not due to the relationship with impulsivity. However, it is possible that this relationship exists because when people drink more heavily they make poorer judgments in regard to risky behavior.

Unexpectedly, the LRA factors were not related to a positive family history of alcoholism. It is possible that the instrument used to assess family history of alcoholism did not allow respondents to adequately describe their parents' pattern of alcohol use (Cuijpers & Smit, 2001) because of the instruments inability to differentiate between the many types of alcoholism (subtypes, comorbidity, age of onset; Crews & Sher, 1992).

This study is the first step to understanding the relationship between college students' alcohol use and their behavioral responses to legal encounters. The results of this study describe important features of collegiate alcohol use that may be important for understanding the behaviors that college students engage in which increase their chances of experiencing a legal encounter. Thus, one strength of this study is that it represents initial efforts to address the paucity of legal encounter research in the collegiate alcohol use literature. Another strength of this study are the sample characteristics. This sample is similar to other samples in regards to binge drinking rates. Approximately 45% of the current underage sample reported binge drinking in the past month compared to 40% nationwide (Weschler et al., 2000b). Thus, it appears that this sample is representative of underage and legal age college students drinking behavior nationwide.

A major weakness of the study is the lack of randomization in the sample. Additionally, some characteristics of the sample are not representative of the characteristics of large scale national collegiate samples. For example, Caucasian students represented 85.3% of the students who participated in the current study, while national samples report 78% of Caucasian students (Weschler, 2000). Additionally, this sample consisted largely of freshman (42.7%), while national studies report 23% freshman (Weschler, 2000). Further, risky drinking behaviors are confounded by other problematic behaviors (e.g., academic difficulties, engaging in unprotected sex) that could influence whether a student engages in risky behaviors as reflected in the LRA. Another weakness is the exclusion of the item "taking public transportation." The low variability of responses to this item probably reflect the rural location where this study

was conducted. Researchers who use this measure should consider whether this item would be useful in understanding college students travel behaviors based on the location of the study.

Other weaknesses of the study include characteristics of the measure of interest. Specifically, the response options of the measure are qualitative rather than quantitative. There is no precise measurement of individuals' descriptions of their legal risk behavior while drinking alcohol. Modifications of this measure might examine valid ways to present quantitative response options to participants to gain a more accurate reflection of legal risk behaviors. Second, the *private drinking situations* factor consists of only three items. This small sample of items may make it difficult for participants to accurately report their private drinking situations. This small sample of items affects the measuring of internal consistency, reliability, and correlations between other variables because of the lack of variance in the factor.

Other considerations include the measurement of socialization and family history of alcoholism and assessment of other drug use. The CPI-So is a measure used to distinguish delinquents from non-delinquents. This measure may not be sensitive enough to distinguish differences in socialization in a group that is already highly socialized. Finally, the researcher's failure to assess for other substance use may have excluded information that may have affected levels of socialization (Gough, 1994) and may also be associated with impulsivity or quantity and frequency of alcohol use. As previously mentioned, the measurement of family history of alcoholism with a single item may also

not have been sensitive enough to understand college students' perception of their parents drinking habits.

It is not known whether the LRA is a useful tool to predict alcohol-related legal encounters in college students. If research can demonstrate that the LRA is effective in identifying students who are likely to have a legal encounter in the near future then this measure could be used as a way to understand what changes, if any, may occur in behavior following a legal encounter. The data from this study suggests that students who experienced a legal encounter in the past year engage in particularly heavy episodic alcohol use and may be a reasonable target group for a brief targeted prevention intervention. However, such interventions would not be necessary if the legal encounter itself results in significant and durable changes in drinking behaviors. Thus, in addition to determining the predictive validity of the LRA future research should assess the effect legal encounters have upon subsequent behavior in college students who use alcohol.

Overall, the LRA measures behaviors that are distinct from alcohol-related negative consequences, impulsivity, and quantity and frequency of alcohol use. The LRA is a useful measure that distinguishes behaviors engaged in while drinking alcohol into three useful categories that go above and beyond that obtained by using simple measures of consequences and quantity and frequency. The LRA has the ability to more accurately identify individuals who engage in risky behavior while using alcohol and who may be prime targets for prevention efforts.

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APPENDIXES

APPENDIX A
TABLES AND FIGURES

Table 1

Demographic Information

		Frequency	Percent
Gender	Male	73	31.5%
	Female	159	68.5%
Ethnicity	Caucasian	198	85.3%
	African American	4	1.7%
	Asian American	4	1.7%
	Native American	14	6.0%
	Asian	3	1.3%
	Biracial	3	1.3%
	Other	3	1.3%
	Prefer not to respond	2	0.9%
Year in College	Freshman	99	42.7%
	Sophomore	44	19.0%
	Junior	53	22.8%
	Senior	34	14.7%
	Graduate student	1	0.4%
Member of fraternity/sorority	Member	63	27.2%
	Non-member	169	72.8%
Marital Status	Never married	220	94.8%
	Married	7	3.0%
	Divorced	2	0.9%

	Cohabiting with a partner	3	1.3%
Type of Residence	On campus	116	47.4%
	Off campus/alone	34	14.7%
	Off campus/roommate	44	19.0%
	Off campus/parents	9	3.9%
	Fraternity/Sorority house	33	14.2%
	Other	2	0.9%
Family Income	Poor	5	2.0%
	Lower Middle Class	26	10.5%
	Middle Class	17	43.3%
	Upper Middle Class	94	38.1%
	Wealthy	12	4.9%
Alcohol-Related Charges	Public Intoxication	0	0%
	Minor in Possession	2	0.9%
	Using False Identification	0	0%
	Driving Under the Influence	1	0.4%
	Transporting an Open Container of Alcohol	0	0%
	Actual Physical Control	1	0.4%
	Other Charge	2	0.9%

Table 2

Means and Standard Deviations of All Initial LRA Items

Items	Mean	Standard Deviation
1. ...drinking in your home	1.16	0.98
2. ...with one or more persons likely to get into physical fights while drinking alcohol	0.44	0.64
3. ...drinking at a "house party"	1.32	0.97
4. ...with one or more persons likely to use illegal drugs while drinking alcohol	0.62	0.76
5. ...in a private setting other than your home	1.30	0.88
6. ...with a small group (i.e., 10 or less) of friends or family	1.72	0.88
7. ...at a public event (e.g., sports, concerts, etc.)	0.42	0.64
8. ...with one or more persons likely to get into a verbal fight while drinking alcohol	0.72	0.76
9. ...at a bar or a club	0.61	0.84
10. ... <i>by yourself</i>	0.23	0.49
11. ... <i>using illegal drugs while drinking alcohol</i>	0.23	0.52
12. ... <i>use false identification to gain access to bar or club</i>	0.04	0.23
13. ...drink in a private setting that did not require you to travel (e.g., walk or drive)	1.43	0.92
14. ...have a designated non-drinking driver drive you to another location	1.59	1.09
15. ...drive yourself after drinking	0.60	0.77
16. ...drive more slowly when drinking and driving	0.89	1.12
17. ...call a taxi or a friend to drive you to another location	0.95	1.02

Items	Mean	Standard Deviation
18. ...keep the noise level in the car to a minimum when you were drinking and driving	0.81	1.01
19. ...stay or sleep over where you drank until you were sober	1.18	1.00
20. ...arrange for alternate transportation after drinking	01.3	1.07
21. ...plan ahead so that you wouldn't have to drive after drinking	1.79	1.07
22. ...take some action towards maintaining or achieving sobriety (e.g., spaced out drinking, waited before driving, drank at beginning of occasion, vomitted, ate food, etc.)	1.31	1.00
23. ...obey traffic laws when you were drinking and driving	1.86	1.36
<i>24. ...take public transportation</i>	<i>0.24</i>	<i>0.58</i>
25. ...ride with a driver who had been drinking	0.81	0.81
26. ...walk home after drinking	0.72	0.80
27. ...let someone else who had not been drinking at the drinking location drive instead of driving yourself	1.44	1.02
28. ...drive with an open container of alcohol in the car	0.59	0.76
<i>29. ...use false identification to purchase alcohol</i>	<i>0.09</i>	<i>0.40</i>

Note: All items were preceded by the stem “In the past month when you were drinking alcohol how often were you (did you)....” Items that were excluded from further analyses do to low rates of endorsement are displayed in italics.

Table 3

LRA Items and Principle Component Analysis Factor Loadings

Items	Components		
	Risky Drinking	Safe Travel	Private Drinking
1. ...drinking in your home	-.02	-.22	.67
2. ...with one or more persons likely to get into physical fights while drinking alcohol	.49	.15	-.07
3. ...drinking at a "house party"	.64	.45	-.19
4. ...with one or more persons likely to use illegal drugs while drinking alcohol	.61	.11	-.01
5. ...in a private setting other than your home	.47	.39	.01
6. ...with a small group (i.e., 10 or less) of friends or family	.14	.13	.68
7. ...at a public event (e.g., sports, concerts, etc.)	.49	.10	.15
8. ...with one or more persons likely to get into a verbal fight while drinking alcohol	.66	.21	-.07
9. ...at a bar or a club	.34	.13	-.07
13. ...drink in a private setting that did not require you to travel (e.g., walk or drive)	.05	.09	.73
14. ...have a designated non-drinking driver drive you to another location	.06	.80	-.03
15. ...drive yourself after drinking	.76	-.07	.16
16. ...drive more slowly when drinking and driving	.72	.15	.21
7 ...call a taxi or a friend to drive you to another location	.27	.70	.02

Items	Components		
	Risky Drinking	Safe Travel	Private Drinking
20. ...arrange for alternate transportation after drinking	.18	.82	.05
21. ...plan ahead so that you wouldn't have to drive after drinking	-.13	.73	.10
<i>22. ...take some action towards maintaining or achieving sobriety (e.g., spaced out drinking, waited before driving, drank at beginning of occasion, vomitted, ate food, etc.)</i>	<i>.19</i>	<i>.51</i>	<i>.30</i>
23. ...obey traffic laws when you were drinking and driving	.62	.23	.25
25. ...ride with a driver who had been drinking	.70	.00	.06
<i>26. ...walk home after drinking</i>	<i>.38</i>	<i>.40</i>	<i>-.21</i>
27. ...let someone else who had not been drinking at the drinking location drive instead of driving yourself	.29	.70	-.01
28. ...drive with an open container of alcohol in the car	.68	.02	.02

Note: Items in bold designate items that comprise subscale scores for each factor. Items in italics designate items that were not retained in the factor analysis.

Table 4

Bivariate Correlations between LRA Factors

	Risky Drinking	Safe Travel	Private Drinking
Risky Drinking	1.00		
Safe Travel	.10	1.00	
Private Drinking	.11	-.01	1.00

Table 5

Bivariate Correlations between Factor Scores from Time 1 to Time 2

Factors	Risky Drinking (time 2)	Safe Travel (time 2)	Private Drinking (time 2)
Risky Drinking (time 1)	.87**	.04	-.04
Safe Travel (time 1)	.04	.75**	-.04
Private Drinking (time 1)	.03	-.15	.72**

** $p < .01$ level (2-tailed)

Table 6

Comparison Demographics between Non-Retest Sample and Retest Sample

		Non-Retest	Retest	
		Mean	Mean	
		Frequency (Percent)	Frequency (Percent)	Test
Age		19.81	20.4	
Gender	Male	31 (42.5%)	42 (57.5%)	$\chi^2 = 0.002$
	Female	68 (42.8%)	91 (57.2%)	
Ethnicity	Caucasian	83 (41.9%)	115 (58.1%)	$\chi^2 = 0.313$
	Other Ethnicity	16 (47.1%)	18 (52.9%)	
Year in College	Freshman	47 (47.5%)	52 (52.5%)	$\chi^2 = 1.629$
	Sophomore / Junior	38 (39.2%)	59 (60.8%)	
	Other	14 (38.9%)	22 (61.1%)	
Member of fraternity / sorority	Member	25 (39.7%)	38 (60.3%)	$\chi^2 = 0.316$
	Non-member	74 (43.8%)	95 (56.2%)	
Marital Status	Never married	95 (43.2%)	125 (56.8%)	$\chi^2 = 0.451$
	Other	4(33.3%)	8 (66.7%)	
Type of Residence	On campus	48 (43.6%)	62 (56.4%)	$\chi^2 = 3.695$
	Off campus / roommate	20 (45.5%)	24 (54.5%)	

	Non-Retest	Retest	
	Frequency (Percent)	Frequency (Percent)	
Other	14 (31.1%)	31 (68.9%)	
	Mean (SD)	Mean (SD)	Test
Risky Behavior	6.09 (4.65)	7.54 (5.29)	$t = -2.17^*$
Safe Travel	7.36 (4.17)	6.87 (4.08)	$t = 0.89$
Private Drinking	4.09 (2.22)	4.50 (2.06)	$t = -1.45$
CAPS-r _{month}	6.94 (6.21)	9.41 (7.52)	$t = -2.65^{**}$
CAPS-r _{year}	10.42 (9.66)	13.38 (10.5)	$t = -2.19^*$
Impulsivity	31.69 (5.08)	31.68 (5.65)	$t = 0.01$
Socialization	17.12 (3.73)	17.32 (4.87)	$t = -0.34$
Social Desirability	6.66 (1.78)	6.72 (1.76)	$t = -0.26$

* $p < .05$, ** $p < .01$ (2-tailed)

Table 7

Bivariate Correlations between Factors and Alcohol-Related Negative, Impulsivity, and Socialization

	CAPS-R month	CAPS-R year	Impulsivity	Socialization
Risky Drinking	.48**	.44**	.18**	.05
Safe Travel	.10	.09	.12	-.04
Private Drinking	.13*	.12	.05	.03

* $p < .05$, ** $p < .01$ (2-tailed)

Table 8

Bivariate Correlations between Factors and Quantity and Frequency and Social Desirability

	Peak drinking in past month	Typical drinking in past month	Frequency of drinking in past month	Frequency of getting intoxicated in the past month	Social desirability
Risky Drinking	.56**	.49**	.58**	.54**	.02
Safe Travel	.18**	.14**	-.00	.08	.01
Private Drinking	.09	.11	.19**	.07	.09

** $p < .01$

Table 9

Bivariate Correlations between Factors and Family History of Alcoholism

	Biological father is/was alcoholic	Biological mother is/was alcoholic
Risky Drinking	-.02	-.04
Safe Travel	.00	-.04
Private Drinking	.04	.02

Table 10

Comparison Demographics between Legal Encounter Sample and No Legal Encounter Sample

		Legal Encounter	No Legal Encounter	
		Mean	Mean	
		Frequency (Percent)	Frequency (Percent)	Test
Age		19.80	20.15	
Gender	Male	15 (20.5%)	58 (79.5%)	$\chi^2 = 1298.93^{**}$
	Female	16 (10.1%)	143 (89.9%)	
Ethnicity	Caucasian	28 (14.1%)	170 (85.9%)	$\chi^2 = 115.93^{**}$
	Other Ethnicity	3 (8.8%)	31 (91.2%)	
Year in College	Freshman	11 (11.1%)	88 (88.9%)	$\chi^2 = 33.164^{**}$
	Sophomore / Junior	18 (18.6%)	79(81.4%)	
	Other	2 (5.6%)	34 (94.4%)	
Member of fraternity / sorority	Member	15 (23.8%)	48 (76.2%)	$\chi^2 = 48.43^{**}$
	Non-member	16 (9.5%)	153 (90.5%)	
Marital Status	Never married	30 (13.6%)	190 (86.4%)	$\chi^2 = 186.48^{**}$
	Other	1 (8.3%)	11 (91.7%)	
Type of Residence	On campus	8 (7.3%)	102 (92.7%)	$\chi^2 = 63.69^{**}$

	Legal Encounter	No Legal Encounter	
	Frequency (Percent)	Frequency (Percent)	
Sorority / Fraternity	8 (24.2%)	25 (78.8%)	
	Mean (SD)	Mean (SD)	Test
Risky Behavior	10.58 (3.8)	6.35 (5.01)	$t = 15.50^{**}$
Safe Travel	7.67 (2.56)	6.99 (4.3)	$t = 16.69^{**}$
Private Drinking	4.7 (1.46)	4.26 (2.22)	$t = 17.90^{**}$
CAPS-r _{month}	13.9 (7)	7.5 (6.72)	$t = 24.05^{**}$
CAPS-r _{year}	21.7 (8.73)	1.64 (9.65)	$t = 36.15^{**}$
Impulsivity	33.64 (4.53)	31.38 (5.47)	$t = 4.76^*$
Socialization	16.61 (3.23)	17.33 (4.56)	$t = 0.71$
Social Desirability	6.9 (1.75)	6.67 (1.77)	$t = 0.46$

* $p < .05$, ** $p < .01$

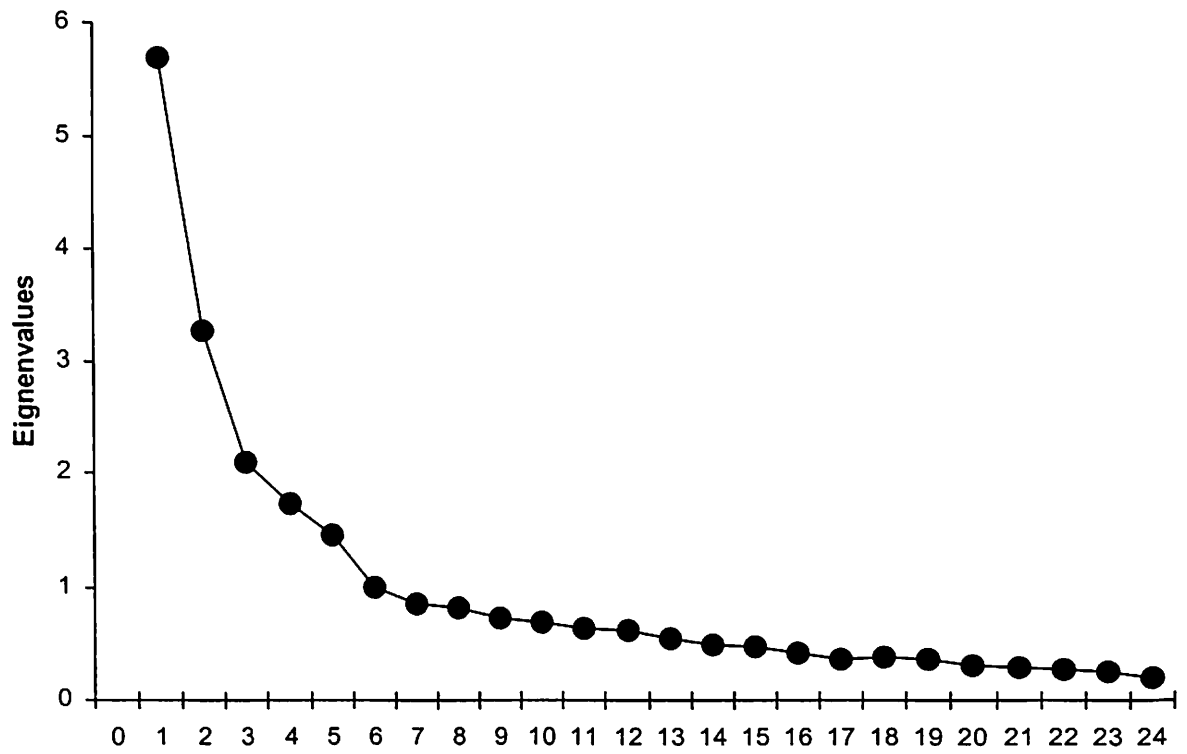


Figure 1.

Scree plot of eigenvalues for principle components analysis for LRA.

APPENDIX B
INFORMED CONSENT

College Drinker's Survey

What is this project? Who is responsible for the project?

This project is designed to understand the behaviors of college student who use alcohol. The project is titled the "College Drinker's Survey" and is being conducted by Melissa J. Boczar, a graduate student in the Department of Psychology at Oklahoma State University and Thad Leffingwell, Ph.D., Assistant Professor. This project is approved by OSU's Institutional Review Board.

Why might I be asked to participate?

You have been invited to participate because you are currently a college student who is at least 18 years of age and consumes alcohol at least occasionally.

What will I be asked to do?

All participants will complete an online survey that includes questions about your alcohol use, other behaviors while using alcohol, problems associated with using alcohol, and personality. This questionnaire should take approximately 30-45 minutes to complete. You will have the option of volunteering to be contacted one week after your participation in the study to complete an additional session of the survey. This session is expected to take less than 10 minutes to complete. In agreeing to participate in this study, you will also be giving permission for researchers to retain your name to gather follow-up information relevant to this study. This information will include the occurrence of future alcohol-related arrests in the Stillwater area (e.g., Minor in Possession). This information is not confidential information and does not require direct involvement by you. Your name will never be kept in the same file as the data you provide, and can only be connected through a code number known only to the researchers.

What are the risks of participating in this project?

The risks of this study are minimal and do not exceed those ordinarily encountered in daily life.

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, and several measures will be taken to make it very unlikely that this confidentiality is compromised. Computerized data will be maintained in a password-protected file accessible only by the researchers. Identifying information will be replaced with a code number, and information that connects code numbers with names will be kept in a separate file by the researchers. Your individual responses to the questionnaire will only be seen by the researchers, and will not be seen by anyone else involved at Oklahoma State University, legal authorities, or your parents.

What are the benefits of participating?

If you choose to participate, the primary benefit to you will be one unit of research credit. After completing the survey, you will be directed to a separate page that will ask you to submit your name, student number, and other information to allow us to make sure you are given appropriate credit for your participation. This information will be kept separate from the data you provide on the survey. If you choose to participate in the one-week follow-up session of this study, you will have the chance to win one of two DVD players.

What are the alternatives?

The alternative is to not participate. Your participation is 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 optional comparable activities available. 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, Ph.D. at (405) 744-7494 or 215 North Murray, Stillwater, OK 74078. If you have questions about your rights as a research participant, you may take them to the Dr. Carol Olson, IRB Chair of OSU's Institutional Review Board at (405) 744-1676 or 415 Whitehurst, Stillwater, OK 74078.

APPENDIX C
DEMOGRAPHIC INFORMATION



Demographic information

To create your unique code number please use the following formula:

First 3 digits of social security number -- day of birth -- last 2 digits of social security number

(For example, if your social security number is 881-001-8801 and your birth date is Feb. 7, your unique code number would be 881-07-01)

Unique code number: - -

Age:

Gender: Male Female

Ethnicity: (choose one)

Year in college:

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Current estimated GPA:

Are you a member of a social sorority or fraternity? Yes No

Marital status:

Residency:

Estimation of family income:

Within the last year have you had any legal encounters with legal authorities related to your use of alcohol that *did not* result in arrest?

Yes No

If you answered "yes" to the question above, please briefly describe the legal encounter

Within the last year have you had any legal encounters with legal authorities related to your use of alcohol that *did* result in arrest?

Yes No

If you answered "yes" to the above question, please indicated the arrest charge (check all that apply):

Public intoxication

Minor in possession

Using false identification

Driving under the influence

Transporting an open container of alcohol

Actual physical control

Other, please describe:

APPENDIX D
FAMILY HISTORY OF ALCOHOLISM

Please answer to the following questions below.

Do you think your biological father is or was an alcoholic?

Yes No

Do you think your biological mother is or was an alcoholic?

Yes No

APPENDIX E
COLLEGE ALCOHOL PROBLEMS
SCALE-REVISED (CAPS-r)

Rate HOW OFTEN you have had any of the following problems over the past month and past year as a result of drinking alcoholic beverages.

Felt sad, blue, or depressed	past month	▼	past year	▼
Was nervous or irritable	past month	▼	past year	▼
Felt bad about myself	past month	▼	past year	▼
Had problems with appetite or sleeping	past month	▼	past year	▼
Engaged in unplanned sexual activity	past month	▼	past year	▼
Drove under the influence	past month	▼	past year	▼
Did not use protection when engaging in sex	past month	▼	past year	▼
Engaged in illegal activities associated with drug use	past month	▼	past year	▼

APPENDIX F
FREQUENCY AND QUANTITY QUESTIONNAIRE

Alcohol Use

For the following questions, *one drink* equals:

- 4 ounces of wine
- 1 wine cooler
- 12 ounces of "3-2" beer
- 8-10 ounces of "6-point" beer, malt liquor, ice beers, or "microbrew" beers
- A mixed drink with 1 ounce of liquor
- A single shot of liquor

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

On *an average weekend evening*, how much alcohol do you typically drink? Estimate for the past month.

How often during the last month did you drink alcohol?

On how many occasions did you drink to get drunk in the past 30 days?

APPENDIX G
LEGAL RISK ASSESSMENT

When drinking alcohol you may take certain actions that prevent you from being in a situation that could result in negative consequences. The following items are things individuals might do or might avoid doing to reduce the chance of detection by police or authorities when drinking alcohol. Think about your own drinking habits over the past month and respond to the following statements below.

In the past month when you were drinking alcohol how often were you...

- ... in your home/residence?
- ... with one or more persons likely to get into a physical fight while drinking alcohol?
- ... at a "house party"?
- ... with one or more persons likely to use illegal drugs while drinking alcohol?
- ... in a private setting other than your home/residence?
- ... with a small group (i.e., less than 10) of friends or family?
- ... at a public event (e.g., sports, concerts, etc.)?
- ... with one or more persons likely to get into a verbal fight while drinking alcohol?
- ... at a bar or a club?
- ... by yourself?
- ... using illegal drugs while drinking alcohol?

In the past month when you were drinking alcohol how often did you...

- ...use false identification (a "fake id") to gain access to a bar or club?
- ...drink in a private setting that did *not* require you to travel (e.g., walk or drive)?
- ...have a designated non-drinking driver drive you to another location?
- ...drive yourself after drinking?
- ...drive more slowly when drinking and driving?
- ...call a taxi or a friend to drive you to another location?
- ...keep the noise level in the car to a minimum when you were drinking and driving?
- ...stay or sleep over where you drank until you were sober?
- ...arrange for alternate transportation after drinking?
- ...plan ahead so that you wouldn't have to drive after drinking?
- ...take some action towards maintaining or achieving sobriety (e.g., spaced out drinking, waited before driving, drank at beginning of occasion, vomitted, ate food, etc)?
- ...obey traffic laws when you were drinking and driving?
- ...take public transportation?
- ...ride with a driver who had been drinking?
- ...walk home after drinking?
- ...let someone else who had *not* been drinking at the drinking location drive instead of driving yourself?
- ...drive with an open container of alcohol in the car?
- ...use false identification (a "fake id") to purchase alcohol?

APPENDIX H
CALIFORNIA PERSONALITY INVENTORY
SOCIALIZATION SCALE (CPI-So)

Instructions: Listed below are a number of statements concerning personal attitudes and traits. Read each item and decide whether the statement is true or false as it pertains to you.

- I often feel that I made a wrong decision in my occupation. True False
- When I was going to school, I played hooky quite often. True False
- I think Lincoln was greater than Washington. True False
- I would do almost anything on a dare. True False

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- With things going as they are, its hard to keep up the hope of amounting to something. True False
- I think I am stricter about right and wrong than most people. True False
- I am somewhat afraid of the dark. True False
- My parents have often disapproved of my friends. True False
- My home life was always happy. True False
- I often act on the spur of the moment without stopping to think. True False
- My parents have generally let me make my own decisions. True False
- I would rather go without something than ask for a favor. True False
- I have had more than my share of things to worry about. True False
- When I meet a stranger, I often think that he is better than I am. True False

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- Before I do something, I try to consider how my friends will react to it. True False
- I have never been in trouble with the law. True False
- In school I was sometimes sent to the principle for cutting up. True False
- Most of the time I feel happy. True False
- I often feel as though I have done something wrong or wicked. True False
- I have often gone against my parent's wishes. True False
- I often think about how I look and what impression I am making on others. True False
- I have never done any heavy drinking. True False
- I find it easy to "drop" or "break" with a friend. True False
- I get nervous when I have to ask someone for a job. True False

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- Sometimes I used to feel that I would like to leave home. True False
- I never worry about my looks. True False
- My home life was always very pleasant. True False
- I seem to do things that I regret more often than other people do. True False
- My table manners are not quite as good at home as when I am out in company. True False
- It is pretty easy for people to win arguments with me. True False
- I know who is responsible for most of my troubles. True False
- I get pretty discouraged with the law when a smart lawyer gets a criminal free. True False
- I have used alcohol excessively. True False
- I sometimes wanted to run away from home. True False

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- Life usually hands me pretty raw deals. True False
- People often talk about me behind my back. True False
- I would never play cards (poker) with a stranger. True False
- I don't think I'm quite as happy as others seem to be. True False
- I used to steal sometimes when I was a youngster. True False
- My home as a child was less peaceful and quiet than those of most other people. True False
- As a youngster in school, I used to give the teachers lots of trouble. True False
- If the pay was right, I would like to travel with a circus or carnival. True False
- I never cared much for school. True False
- The members of my family were always very close to each other. True False
- My parents never really understood me. True False
- A person is better off if he doesn't trust anyone. True False

APPENDIX I
EYSENCK IMPULSIVITY SCALE (I7)

Instructions: Listed below are a number of statements concerning behaviors and personality characteristics. Read each item and decide whether the statement is true or false as it pertains to you by responding "yes" or "no".

- | | | |
|---|-----|----|
| Would you enjoy water skiing? | Yes | No |
| Usually do you prefer to stick to brands you know are reliable, to trying new ones on the chance of finding something better? | Yes | No |
| Would you feel sorry for a lonely stranger in a group? | Yes | No |
| Do you enjoy taking risks? | Yes | No |
| Do you often get emotionally involved with your friend's problems? | Yes | No |
| Would you enjoy parachute jumping? | Yes | No |
| Do you often buy things on impulse? | Yes | No |
| Do unhappy people who are sorry for themselves irritate you? | Yes | No |

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- | | | |
|---|-----|----|
| Do you generally do and say things without stopping to think? | Yes | No |
| Are you inclined to get nervous when others around you seem to be nervous? | Yes | No |
| Do you often get into a jam because you do things without thinking? | Yes | No |
| Do you think hitch-hiking is too dangerous a way to travel? | Yes | No |
| Do you find it silly for people to cry out of happiness? | Yes | No |
| Do you like diving off the highboard? | Yes | No |
| Do people you are with have a strong influence on your moods? | Yes | No |
| Are you an impulsive person? | Yes | No |
| Do you welcome new and exciting experiences and sensations, even if they are a little frightening and unconventional? | Yes | No |
| Does it affect you very much when one of your friends seems upset? | Yes | No |

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- Do you usually think carefully before doing anything? Yes No
- Would you like to learn to fly an airplane? Yes No
- Do you ever get deeply involved with the feelings of a character in a film, play or novel? Yes No
- Do you often do things on the spur of the moment? Yes No
- Do you get very upset when you see someone cry? Yes No
- Do you sometimes find someone else's laughter catching? Yes No
- Do you mostly speak before thinking things out? Yes No
- Do you often get involved in things you later wish you could get out of? Yes No
- Do you get so "carried away" by new and exciting ideas, that you never think of possible snags? Yes No
- Do you find it hard to understand people who risk their necks climbing mountains? Yes No

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- Can you make decisions without worrying about other people's feelings? Yes No
- Do you sometimes like doing things that are a bit frightening? Yes No
- Do you need to use a lot of self-control to keep out of trouble? Yes No
- Do you become more irritated than sympathetic when you see someone cry? Yes No
- Would you agree that almost everything enjoyable is illegal or immoral? Yes No
- Generally do you prefer to enter cold sea water gradually, to diving or jumping straight in? Yes No
- Are you often surprised at people's reactions to what you do or say? Yes No
- Would you enjoy the sensation of skiing very fast down a high mountain slope? Yes No
- Do you like watching people open presents? Yes No
- Do you think an evening out is more successful if it is unplanned or arranged at the last moment? Yes No

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Would you like to go scuba diving?	Yes	No
Would you find it very hard to break bad news to someone?	Yes	No
Would you enjoy driving fast driving?	Yes	No
Do you usually work quickly, without bothering to check?	Yes	No
Do you often change your interests?	Yes	No
Before making up your mind, do you consider all the advantages and disadvantages?	Yes	No
Can you get very interested in your friends' problems?	Yes	No
Would you like to go pot-holing?	Yes	No
Would you be put off a job involving quite a bit of danger?	Yes	No
Do you prefer to "sleep on it" before making decisions?	Yes	No

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When people shout at you, do you shout back?	Yes	No
Do you feel sorry for very shy people?	Yes	No
Are you happy when you are with a cheerful group and sad when the others are glum?	Yes	No
Do you usually make up your mind quickly?	Yes	No
Can you imagine what it must be like to be very lonely?	Yes	No
Does it worry you when others are worrying and panicky?	Yes	No

APPENDIX J
MARLOWE-CROWNE SOCIAL DESIRABILITY
SCALE - SHORT FORM (MC-SDS)

Instructions: Listed below are a number of statements concerning personal attitudes and traits. Read each item and decide whether the statement is true or false as it pertains to you.

It is sometimes hard for me to go on with my work if I am not encouraged. True False

I sometimes feel resentful when I don't get my way. True False

On a few occasions, I have given up doing something because I thought too little of my ability. True False

There have been times when I felt like rebelling against people in authority even though I knew they were right. True False

No matter who I'm talking to, I'm always a good listener. True False

There have been occasions when I took advantage of someone. True False

I'm always willing to admit it when I make a mistake. True False

I sometimes try to get even rather than forgive and forget. True False

I am always courteous, even to people who are disagreeable. True False

I have never been irked when people expressed ideas very different from my own. True False

There have been times when I was quite jealous of the good fortune of others. True False

I am sometimes irritated by people who ask favors of me. True False

I have never deliberately said something that hurt someone's feelings. True False

APPENDIX K
REFERRAL INFORMATION

Psychological Services Center

118 North Murray Hall, Stillwater, OK 74078

405-744-5975

The Psychological Services Center (PSC) provides therapeutic assistance to any interested individuals from Oklahoma State University or the surrounding area. Service fees are based on individual yearly income. All appointments are confidential.

College Drinker's Check-up

118 North Murray Hall, Stillwater, OK 74078

405-744-5975

The College Drinker's Check-up (CDC) is a service provided by the Behavior Change Laboratory in the Psychology Department at OSU. The CDC provides non-confrontational evaluations that are designed to help you make informed decisions about your alcohol use. Evaluations consist of an assessment interview, a session to complete questionnaires, a feedback interview, and a personalized report. Evaluations are \$75 (\$50 for OSU students). All appointments are confidential.

Personal Counseling Services

301 Student Union, Stillwater, OK 74078

405-744-5472

or

002 Student Health Center, Stillwater, OK 74078

405-744-7007

The Personal Counseling Services (PCS) provide therapeutic assistance to members of the Oklahoma State University community. Sessions are provided at a minimal fee. All appointments are confidential.

Payne County Counseling Center

801 S. Main, Stillwater, OK 74074

405-372-0198

The Payne County Counseling Center provides members of the community with counseling services and substance use evaluations. Service fees vary. All appointments are confidential.

Starting Point II, Inc

608 Highpoint Drive, Stillwater, OK 74075

405-377-1517

Starting Point II, Inc., is a non-profit agency that provides substance abuse services for members of the Stillwater community. Services include outpatient counseling, substance abuse evaluations, substance abuse education, non-medical detoxification, and continuing care counseling. Service fees vary. All appointments are confidential.

APPENDIX L
OKLAHOMA STATE UNIVERSITY
INSTITUTIONAL REVIEW BOARD
APPROVAL LETTER

Oklahoma State University
Institutional Review Board

Protocol Expires: 12/18/2004

Date: Friday, December 19, 2003

IRB Application No AS0441

Proposal Title: College Drinker's Survey

Principal
Investigator(s):

Melissa Boczar
215 N. Murray
Stillwater, OK 74078

Thad Leffingwell
215 N. Murray
Stillwater, OK 74078

Reviewed and
Processed as: Expedited

Approval Status Recommended by Reviewer(s): Approved

Dear PI:

Your IRB application referenced above has been approved for one calendar year. Please make note of the expiration date indicated above. 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.

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 projects are subject to monitoring by the IRB. If you have questions about the IRB procedures or need any assistance from the Board, please contact me in 415 Whitehurst (phone: 405-744-5700, colson@okstate.edu).

Sincerely,



Carol Olson, Chair
Institutional Review Board

MELISSA J. BOCZAR

PERSONAL INFORMATION

Work Address: Oklahoma State University
Psychology Department
215 North Murray
Stillwater, OK 74078
405-744-2694
405-744-8067 (fax)

Home Address: 3602 North Washington Street, #A8
Stillwater, OK 74075
405-372-2257 (home)
405-269-4759 (cell)

Email: mjboczar@hotmail.com

EDUCATIONAL HISTORY

Oklahoma State University, Stillwater, OK (2001-present)
Degree: Ph.D. (expected 2007)
Major: Clinical Psychology (APA Accredited)

University of Oklahoma, Norma, OK (1997-2001)
Degree: B.A. (Graduated with Distinction)
Major: Psychology

Completed the requirements for the Master of Science degree at Oklahoma State University in May 2004.

CLINICAL EXPERIENCE

Psychological Associate August 2001-present
Oklahoma State University
Psychological Services Center
118 North Murray
Stillwater, OK 74078
405-744-5975

Duties: Conduct individual psychotherapy, marriage and family therapy, and cognitive assessment.
Supervisors: Douglas Scambler, Ph.D. Fall 2003-Spring 2004
John Chaney, Ph.D. Fall 2002-Spring 2003
Thad R. Leffingwell, Ph.D. Fall 2001-Spring 2002

Psychological Trainee July 2003-July 2004
Veterans Affairs Medical Center
Substance Abuse Treatment Center
921 NE 13th Street
Oklahoma City, OK 73104
405-270-0501

Duties: Instructor recovery issues education class, co-facilitate group therapy, conduct individual psychotherapy, and perform case management duties.
Supervisor: Steven Scruggs, Psy.D.

TEACHING EXPERIENCE

Graduate Instructor August 2002-May 2003
Oklahoma State University
Psychology Department
215 North Murray
Stillwater, OK 74078
405-744-6027
Course: Introduction to Psychology
Audience: Undergraduate students
Supervisor: Bill Scott, Ph.D.

PROFESSIONAL MEMBERSHIPS AND PROFESSIONAL SERVICE

Preparing Future Faculty Oklahoma State University
Fall 2003-Spring 2005

American Psychological Association (APA) – Student Affiliate
Division 12 – Society of Clinical Psychology
Division 28 – Psychopharmacology and Substance Abuse
Division 50 – Addictive Behaviors

Oklahoma Psychological Association – Student Affiliate

Association for the Advancement of Behavior Therapy (AABT) – Student Affiliate
Graduate Psychology Student Association (GPSA) Oklahoma State University
Department Advisory Committee Representative Fall 2003-Spring 2004
Faculty-Staff Representative Fall 2002-Spring 2003

FELLOWSHIPS AND AWARDS

Robberson Trust, Robberson Fellowship Committee, and the Graduate College at
Oklahoma State University

June 2003

Duties: Conducted a pilot study for on-going research project involving college students who use alcohol and had a legal encounter for alcohol-related offenses.

McAlister Scottish Rite Fellowship

April 2003

Fellowship contributed to the financial support of co-investigator (Melissa J. Boczar) on on-going research projects.

Oklahoma State University Foundation, Women's Giving Circle

March 2002

Duties: Conducted research project involving mothers who used substances during pregnancy. Fellowship supported participant reimbursement.

PRESENTATIONS

1. Leffingwell, T.R., Neumann, C.A., Babitzke, A.C., & Boczar, M.J. (2003, November). Defensively biased responding to risk information among alcohol-using college students. Poster presented at the annual meeting of the Association for the Advancement of Behavior Therapy, Boston, Massachusetts.
2. Boczar, M.J., Babitzke, A.C., & Leffingwell, T.R. (2003, August). Cognitive and affective ambivalence and smoking stages of change. Poster presented at the American Psychological Association, Toronto, Canada.
3. Boczar, M.J. & Leffingwell, (2003, March). A new perspective to evaluate the processes of change: evaluation of a definitional measure. Paper presented at the 14th Annual Research Symposium, Stillwater, Oklahoma.
4. Leffingwell, T.R., & Boczar, M.J. (2002, November). A brief definitional measure of the processes of change. Poster presented at the annual meeting of the Association for the Advancement of Behavior Therapy, Reno, Nevada.