Theory of Planned Behavior Constructs as Mediators of Behavior Change Associated with a Brief Alcohol Intervention

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Theory of Planned Behavior Constructs as Mediators of Behavior Change
Associated with a Brief Alcohol Intervention

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THEORY OF PLANNED BEHAVIOR CONSTRUCTS AS MEDIATORS OF BEHAVIOR CHANGE ASSOCIATED WITH A BRIEF ALCOHOL INTERVENTION

by

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THESIS

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Abstract

This study examined the Theory of Planned Behavior constructs (attitudes, subjective norms, perceived behavioral control [PBC], and behavioral intentions) as mediators of changes in alcohol consumption and alcohol-related problems in a longitudinal sample of 206 college students. The Brief Alcohol Screening and Intervention for College Students (BASICS) is a program designed to curb risky alcohol consumption and its related consequences among college students. Eligible students completed a baseline assessment battery at assessment and again six months after participating in BASICS. The AUDIT (Alcohol Use Disorders Identification Test) assessed alcohol consumption and the RAPI (Rutgers Alcohol Problem Inventory) assessed alcohol-related problems. A semantic differential scale designed for the study assessed attitudes towards binge drinking, subjective norms (e.g. “Friends who are important to me encourage me to binge drink,” and “Most people important to me drink moderately or not at all”) items, and a 4-item measure assessed perceived behavioral control (PBC).

Results showed that AUDIT and RAPI scores declined significantly from baseline to follow-up. Significant decreases in AUDIT and RAPI scores may be attributed to changes in attitudes towards binge drinking, PBC, and behavioral intentions to binge drink. For instance, at six months follow-up, students showed more negative attitudes towards binge drinking and thus showed a corresponding reduction in behavioral intentions to binge drink. Subjective norms components failed to show significant changes over time. Overall, the TPB was shown to have strong predictive ability in predicting alcohol consumption among mostly Hispanic college students.
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Chapter 1: Introduction

Each year, 1,700 college students between the ages of 18 and 24 die from alcohol-related unintentional injuries (Hingson, Heeren, Winter, & Wechsler, 2005). The National Institute of Health, along with the National Institute on Alcohol Abuse and Alcoholism, has stated that between 75% to 80% of college students engage in alcohol consumption (Haines, Barker, & Rice, 2006) and more than 40% of students have engaged in episodic binge drinking at least once in the past two weeks (NIAAA, 2002). Binge drinking in college students is considered to be a social norm and alcohol and drug experimentation is actually considered a common rite of passage in American society (Dimeff, Baer, Kivlahan, & Marlatt, 1999). Heavy drinking among college students is a crucial issue that needs to be addressed because of the negative consequences that are associated with it. Accordingly, in Healthy People 2010, the U.S. Department of Health and Human Services has outlined one objective that states the importance of reducing the incidence of binge drinking among college students from 39% to 20% (NIAAA, 2002).

The Theory of Planned Behavior (TPB), developed by Ajzen (1975), has been successfully applied to a wide range of health behaviors (Norman, Bennett, & Lewis, 1998; Armitage & Conner, 2001; Ajzen, 1991; and McMillan & Conner, 2003). It has also been used to predict alcohol consumption and binge drinking among our nation’s youth (Norman et al., 1998; Armitage et al., 2002; Dimeff et al., 1999; McMillan et al., 2003; Norman & Conner, 2006). For instance, in a study conducted by Norman et al. (2006), intentions to binge drink among undergraduate students were significantly predicted by positive attitudes towards binge drinking, strong perceptions of social pressure to binge drink, and weak perceived behavioral control over binge drinking.

The present study seeks to examine the efficacy of TPB constructs (e.g. attitudes, subjective norms, and perceived behavioral control) in their ability to predict behavior change (i.e. risky alcohol consumption) in response to a brief alcohol intervention.
Chapter 2: Literature Review

2.1 ASSUMPTIONS OF THE THEORY OF PLANNED BEHAVIOR

The theory of planned behavior postulates that human behavior is predicted through cognitive self-regulation, rather than a person’s disposition, such as their general social attitudes or personality traits (Ajzen, 1991). This means that a person thinks consciously about the behavior and then chooses whether or not he/she will act upon it. Ajzen (1991) continues to state that these general attitudes or dispositions are poor predictors of behavior in certain situations.

The TPB was designed to explain behavior under volitional control. Volitional control is whether the person can “decide at will to perform or not perform the behavior.” (Ajzen, 1991) For example, a person has the capability to consciously choose whether or not they will binge drink. This decision to perform the behavior in question also depends on “non-motivational” factors such as the presence of opportunities and resources that facilitate or impede the ability to perform the behavior (Ajzen, 1991). Perceived behavioral control is also said to vary across situations whereas locus of control remains stable (Ajzen, 1991).

Finally, in the TPB, behavioral intentions are said to be the most proximal predictor of behavior. Attitudes, subjective norms, and perceived behavioral control are next in terms of proximity to behavior prediction. All other influences on voluntary behavior (e.g. culture, socioeconomic status, etc.) are thought to operate through the three main concepts and behavioral intentions (Ajzen, 1991).

2.2 HISTORY AND MAIN CONCEPTS

The TPB was created as an extension of the Theory of Reasoned Action (TRA; Ajzen & Fishbein, 1985). The TRA is based on the assumption that human beings usually behave in a sensible manner (Ajzen & Fishbein, 1975). For example, people take in available information and implicitly or explicitly consider the implications of their actions (Ajzen, 1985). The theory assumes that a person’s intention to perform (or not perform) a behavior is the instantaneous determinant of that action (Ajzen, 1985). The TRA contains volitional control as a construct, while the TPB extends to include the
perceived behavioral control component (Ajzen, 1985). Researchers have explored the two theories and have concluded that the use of the TPB is more effective than the use of the TRA (Armitage et al., 2001).

The TPB proposes that an individual’s decision to perform a behavior is directed by the following reflections: beliefs about the outcomes and evaluations of the behaviors (behavioral beliefs); beliefs about the normative expectations of others and motivation to comply with these expectations (normative beliefs); and beliefs about the presence of factors that facilitate or discourage performance of the behavior and the perceived power of these factors (control beliefs) (Ajzen, 2002). Behavioral beliefs combine to create attitudes towards the behavior, whether positive or negative, normative beliefs produce subjective norms, and control beliefs generate perceived behavioral control. These three independent variables are then said to mediate the prediction of behavioral intentions (Ajzen, 1991). In turn, intentions are expected to predict variance in behavior (Ajzen, 1991). Numerous studies have supported the TPB in relation to predicting alcohol use in various populations (Armitage et al., 2001; Norman et al., 1998; Norman et al., 2006).

The TPB employs attitudes, subjective norms, perceived behavioral control, and behavioral intentions to predict behavior. The TPB is illustrated in Figure 2.1.

Figure 2.1 The Theory of Planned Behavior
2.2.1 Behavioral Intentions

Behavioral intentions, the central aspect and most proximal predictor of behavior, is an individual’s intention to perform that given behavior (Ajzen, 1991). Subjective norms, attitudes, and perceived behavioral control are in turn expected to predict intentions to perform a behavior which ultimately foretell the behavior itself (Ajzen, 1991). Behavioral intentions are assumed to capture motivational factors that influence a behavior (Ajzen, 1991). Intentions are indications of how much effort individuals are planning to exert in order to perform the behavior (Ajzen, 1991). In this model, these intentions show that people consider the consequences of their behavior and that behavior is deliberate (Ajzen, 1991). The construct would be assessed using a statement such as, “I plan to binge drink in the next 30 days,” with the student’s response choices on a semantic differential scale of extremely likely to extremely unlikely. Consequently, the more favorable the attitude and subjective norms, and the less perceived behavioral control over the behavior, the more likely a student will perform the intended behavior. For instance, a student who reports more positive attitudes towards binge drinking, more social pressure to binge drink, and less perceived behavioral control over binge drink will most likely report higher incidences of binge drinking.

2.2.2 Attitudes

An attitude, which remains relatively stable over time, is defined as an evaluation of an object, event, or idea (Ajzen, 1991). There are three components of an attitude including the cognitive, affective, and behavioral aspects. Behavioral beliefs contribute in the development of an attitude towards the behavior in question and are automatically and simultaneously formed (Ajzen, 1991). Behavioral beliefs are the beliefs that a behavior is associated with certain attributes or outcomes (e.g., “I might miss class if I binge drink the night before”). The individual then attributes a positive or negative value (outcome evaluation) to this belief thus creating a positive or negative attitude towards binge drinking (e.g. “Missing class is good/bad”) (Ajzen, 1991). Affective judgments are the positive or negative beliefs towards a behavior, and evaluative judgments (cognitive) are the perceived costs and
benefits of a given behavior (e.g. “If I miss class, I could fail the upcoming test”) (Ajzen, 1991). Ajzen (1991) states that attitudes are better predictors of behavior when: 1) we measure the attitudes towards the behavior in question and not the object, 2) social forces are minimized, and 3) when we have control over the behavior. Attitudes can be predicted by the summed product of behavioral beliefs and outcome evaluations (Ajzen, 1991).

### 2.2.3 Subjective Norms

Subjective norms are beliefs about whether people important to an individual approve or disapprove of a certain behavior (e.g., “Friends important to me encourage or discourage me to binge drink”) (Ajzen, 1991). The component of subjective norms is comprised of normative beliefs multiplied by the motivation to comply with important referent others’ influences (Ajzen, 1991). Normative beliefs are defined as whether most other people approve or disapprove of the behavior (Ajzen, 1991). Motivation to comply is the motivation a person has to perform or not perform what the referent others think (Ajzen, 1991). Ajzen (1991) states that good measures of this construct should include bipolar scoring of normative beliefs (e.g. response choices that are scored on a range from -3 to +3) and unipolar scoring (e.g. responses on a scale from 0 to 7) of the motivation to comply.

Subjective norms are categorized as either injunctive norms, descriptive norms, or personal/moral norms. Injunctive norms are what significant others think the person should do, and descriptive norms are what significant others do themselves, i.e. what “most people” do (Rivis & Sheeran, 2003). Moral norms represent feelings of moral responsibility to execute or refuse to perform a given behavior (Ajzen, 1991). Ajzen (1991) adds that the assessment of moral norms could add predictive power to the theory. The subjective norms component in the TPB is said to be an injunctive social norm by nature because of its relation to the perception of social pressure, i.e. the individual’s ability to obtain approval or undergo punishment from significant others for engaging in a behavior (Rivis et al., 2003).
2.2.4 Perceived Behavioral Control

Perceived behavioral control is similar to self-efficacy, which is the individual’s perception of the ease or difficulty of their ability to perform a given behavior (Ajzen, 2002). Perceived behavioral control may serve as a substitute for actual behavioral control (Ajzen, 2002). One’s perceived behavioral control may not remain relatively stable and may vary across situations and actions (Ajzen, 1991). Perceived behavioral control refers to people’s expectations regarding the extent to which they are able to perform a given behavior, the level to which they have the necessary resources, and the belief that they can prevail over encountered difficulties (Ajzen, 2002). In theory, those who believe they have the necessary resources and opportunities also believe that they are capable to handle obstacles, thus reporting confidence in their capability to perform a behavior, hence exhibiting a great level of perceived behavioral control (Ajzen 2002, 1991). Alternatively, when one believes that he/she lacks necessary resources or that he/she is likely to encounter serious obstacles, he/she should judge the performance of the behavior to be relatively difficult thus exhibiting a low level of perceived behavioral control (Ajzen, 2002).

These conditions hold true whether the resources or obstacles are internal or external (Ajzen, 2002). For example, external factors such as peer pressure, normative beliefs, and availability of alcohol have been stated to be more important in predicting intentions to consume alcohol rather than internal factors (e.g. attitudes) (Marcoux et al., 1997). Additionally, Norman et al. (2006) maintain that “problem drinkers” have more external forces to drink, e.g. drinking because it is a friend’s birthday. Accordingly, frequent binge drinkers reported that drinking situations, such as being in a group of male friends or buying rounds of alcohol, contributed positively on actual binge drinking (Norman et al., 1998). Consistently, Schlegel et al. (1987) determined that college students who engaged in binge drinking had a more external locus of control than those students who were only light or moderate drinkers (as cited in Norman et al., 1998).
Control beliefs are the perceived likelihood of the occurrence of facilitating or constraining conditions, e.g. “Engaging in a binge drinking session requires a lot of money” (Rivis et al., 2003, p. 219). Ajzen (1991) explains that control beliefs are influenced by acquaintances or friends’ experiences or other factors which may increase or decrease the perceived difficulty of performing the behavior. With that said, if individuals perceive that resources and opportunities are abundant and that the number of obstacles or constraining conditions are fewer, the greater the perceived behavioral control over the behavior (Ajzen, 1991). However, if a person has a small amount of information about the behavior, or if available resources have changed, or when new and unfamiliar elements have entered into the situation, perceived behavioral control may not be fully feasible in the prediction of behavior (Ajzen, 1991). Some researchers have also suggested that perceived behavioral control over consuming a substance (whether it be alcohol or other drugs) should be distinguished from perceived behavioral control over obtaining it (Norman et al., 2006; Orbell, Blair, & Sherlock, 2001).

2.3 **TPB Research in Relation to Alcohol**

2.3.1 *Norman, Bennett, & Lewis (1998)*

Norman and colleagues (1998) explored motivational and attitudinal factors that trigger binge drinking among a sample of undergraduate students. They concluded that two key predictors of binge drinking were positive control beliefs and perceived behavioral control (Norman et al., 1998). Norman et al. (1998) also deduced that positive attitudes towards binge drinking among undergraduate students were an important predictor of the frequency of binge drinking. In addition, frequent binge drinkers were less likely to believe that they have control over their binge drinking (perceived behavioral control), less likely to see negative consequences of binge drinking, and more likely to perceive catalysts of binge drinking (Norman et al., 1998). Though these finding provide substantial support for attitudes, it has been stated that further observations of attitudinal determinants of binge drinking should be examined (Norman et al., 1998).
2.3.2 Norman & Conner (2006)

In another study among undergraduate students, Norman and Conner (2006) determined that attitudes were the strongest predictor of intentions to binge drink as well as actual behavior. It was also found that low perceived behavioral control was correlated with strong intentions to consume alcohol, even when using both correlation and regression analyses (Norman et al., 2006). Negative correlations are typically reported between perceived behavioral control over binge drinking and intentions to consume alcohol/binge drink (Norman et al., 2006), suggesting that one who has high perceived behavioral control over binge drinking will have reduced intentions to overdrink.

2.3.3 McMillan & Conner (2003)

McMillan and Conner (2003) also noted that attitudes towards alcohol use significantly predicted frequency of use among undergraduate students. An interesting finding in the study determined descriptive norms (e.g. perceptions of how other people are actually behaving, whether or not these are approved of) to be a significant predictor of intentions to use alcohol among adolescents (McMillan & Conner, 2003). The researchers further claim that descriptive norms are the key normative predictor in relation to intentions to consume alcohol over all of the variables in the TPB (McMillan et al., 2003). The researchers illustrated the importance of allowing for different forms of normative influence (descriptive norms in particular) within the framework of the TPB (McMillan et al, 2003). In their study, the investigators measured injunctive norms, moral norms, and descriptive norms, but injunctive and moral norms failed to predict intentions to use alcohol (McMillan et al., 2003).

2.3.4 Kuther & Higgins-D’Alessandro (2003)

The study by Kuther and Higgins-D’Alessandro (2003) found that positive attitudes significantly predicted drinking alcohol. But an interesting finding in this particular investigation was that positive attitudes towards drinking were more powerfully related to alcohol use among eleventh graders than college juniors, suggesting that age may be a moderating variable within the TPB context (Kuther et al.,
In spite of this, it was noted that attitudes towards negative alcohol-related consequences among college juniors predicted alcohol use, i.e. as potential negative problems were perceived as more likely to occur, alcohol use increased, though the significance was minor (Kuther et al., 2003). This discovery, the authors claim, among this particular group, probable negative consequences may have been disregarded (Kuther et al., 2003).

Further, Kuther and Higgins-D’Alessandro (2003) found perceived behavioral control to consume alcohol was negatively correlated with reported actual use among adolescents and college freshman and juniors, in conjunction with the previously mentioned studies. Also, Kuther et al. (2003) found that subjective norms were positively related to alcohol consumption and attitudes towards alcohol-related problems, i.e. peers may influence the rate of alcohol consumption.

2.3.5 Rivis & Sheeran (2003)

Rivis and Sheeran (2003) also found that age and the type of health behavior were potential moderators of the descriptive norms-intention relationship. Their report purported that there is a disparity of that relationship between the youth and older adult samples. They found that the association between descriptive norms and intentions to perform a myriad of health behaviors was more strongly related in the samples of the youth (Rivis et al., 2003).

Rivis and Sheeran (2003) argue that other studies that found subjective norms to have a weak effect, failed to control for the effects of the TPB variables, or did not indicate what proportion of the variance was distinctively characteristic to subjective norms.

2.3.6 Other Research

Research is mixed regarding the subjective norms component- some have found it to be statistically significant in predicting intentions and/or actual behavior (Bon, Hittner, & Lawandales, 2001; Johnston & White, 2003; Rise & Wilhelmsen, 1998; Kuther et al., 2003; Marcoux & Shope, 1997; Rivis et al., 2003;), whereas others have not (Armitage & Conner, 2002; McMillan et al, 2003). For
example, according to Baer and Carney (1993), students who drink heavily believe that their drinking patterns are representative of college norms. Dimeff et al. (1999) further support this statement by maintaining that students typically connect and socialize with people who possess similar interests and behaviors, thereby reinforcing distorted beliefs about normative behavior. Accordingly, students develop an incorrect judgment that their drinking patterns are “normal” and similar to most other college students, when in reality, they far surpass the normal statistics (Dimeff et al, 1999). These claims suggest that addressing social norms in TPB-based interventions would be ideal in curbing alcohol misuse especially among college students.

Evidence of the support for such a proposal includes a study conducted by Bon et al. (2001), where it was found that normative perceptions were the strongest predictors of the prevalence of negative sexual consequences among college students when they engaged in alcohol consumption or the use of illicit drugs. Additionally, Johnston and White (2003) found that subjective norms regarding intentions to binge drink were significant in its prediction. Rise et al. (1998) observed that the normative component was a stronger predictor of intentions not to consume alcohol among adolescents than that of attitudes. Also in support was Marcoux’s and Shope’s study (1997) which concluded the normative beliefs of parents as the third most important predictor in alcohol use and misuse among adolescents. This proof strongly supports the notion that social norms are significant in predicting intentions to perform a particular behavior.

Still, others have criticized subjective norms and its weak ability to impact behavioral intentions. Critics have stated that this issue is attributable to a combination of poor measurement, the need for expansion of the subjective norms component, and failing to control for the effects of the TPB variables (Armitage et al., 2002; McMillan et al., 2003; Rivis & Sheeran, 2003).

Conversely, Higgins, and Marcum (2005) found that perceived behavioral control did not correlate with any other measures in the TPB and its power to predict alcohol use among undergraduate
students. The study produced minimal results, however, in a path diagram constructed, investigators found that the direction suggested perceived behavioral control over alcohol use may decrease drinking (Higgins et al., 2005). In contrast, O’Callaghan, Chant, Callan, and Balioni (1997) did not find perceived behavioral control to be significantly associated to any of the variables within the TPB. Armitage, Conner, Loach, and Willets (1999) also found no evidence of a direct relationship between perceived behavioral control to actual alcohol use.

Importantly, researchers have found intentions to use alcohol as the strongest predictor of alcohol use (Higgins & Marcum, 2005; McMillan & Conner, 2003). On the other hand, O’Callaghan and colleagues (1997) found no significant effect of intentions to consume alcohol on behavior. They express that this discrepancy among previous research is attributable to their students’ “non-problem” drinker status (O’Callaghan et al, 1997). In other words, it was assumed that the respondents had high perceived behavioral control over drinking even as intentions to consume alcohol increased (O’Callaghan et al., 1997). Also, the authors explain that this difference may be the result of the examination of drinking alcohol rather than getting drunk or binge drinking (O’Callaghan et al., 1997). In a longitudinal study among adolescents, Marcoux and Shope (1997) correspondingly found that intentions for alcohol use described 26% of variance in alcohol use, 37% of the variance in alcohol use frequency, and 30% of variance in alcohol misuse.

For precise prediction of the behavior in question, Ajzen (1991) explicates that there are several conditions that should be met. First, the measures of intention and perceived behavior control must correspond or be compatible with the behavior that is to be predicted (Ajzen, 1991). For instance, if the behavior to be predicted is binge drinking, then we have to assess intentions to binge drink, as well as perceived control over binge drinking. Secondly, behavioral intentions and perceived behavioral control must remain constant during the time between their assessment and the observation of behavior (Ajzen, 1991).
2.4 Additional Components to Increase the Power of the Predictive Ability of the TPB

Additional constructs, such as descriptive norms or past behavior, may also supplement the predictive power of the TPB as mentioned in the work of McMillan et al. (2003) and Norman et al. (2006), respectively. Also in support of this conclusion, a meta-analysis of descriptive norms as an additional predictor in the TPB, organized by Rivis et al. (2003), found that the addition of descriptive norms as an independent variable significantly increased the variance in intentions and contributed to its overall predictive validity. The investigators assert that the components of descriptive norms and subjective norms are theoretically different (Rivis et al., 2003).

An investigation conducted by Norman, Armitage, and Quigley (2006) also suggests that an additional component, prototype perceptions, is currently ignored by the TPB and may be thought of as an additional source of normative influence. Prototype perceptions can be defined as one’s perception/evaluation of a type of person who engages in the behavior in question. Prototype perceptions were found to explain additional changes in binge drinking intentions and behavior, over the influence of the other TPB variables (Norman et al., 2006). Respondents were asked to provide an evaluation of the type of person who engages in binge drinking at least once a week, e.g. “how similar are you to the type of person who engages in binge drinking at least once a week? Very similar/not at all similar (Norman et al., 2006, p. 1761).” They concluded that those undergraduates who thought of themselves to have similar characteristics to the binge drinker prototype had stronger intentions to engage in binge drinking and reported increased rates of binge drinking at one-week follow-up (Norman et al., 2006). An extra noteworthy conclusion was that of the strength of the positive association of this prototype similarity with the prediction of binge drinking.

However valid the TPB has been found, moderating variables do exist within the framework (Norman et al., 2006; O’Callaghan et al., 1997). Investigators assessed the addition of past behavior as a construct in the TPB (e.g. students were asked to report how often they engaged in a binge drinking session) and found it to contribute to additional variance, independent of the other TPB variables, in
binge drinking intentions and actual binge drinking at the one-week follow-up (Norman et al., 2006). Another role that past behavior played was that of the relation between attitudes and intentions— as past behavior (frequency of binge drinking) increased, the strength of attitudes in relation to intentions decreased (Norman et al., 2006). Interestingly, a high frequency of past binge drinking also decreased the relationship between intentions and actual behavior (Norman et al., 2006). Norman et al. (2006) additionally suggests that an independent measure of habit (or past behavior) should be used to further explain its moderating effect on future behavior. Similarly, when past behavior was added to the TRA, the investigators revealed a significant relationship between past behavior and intentions to consume alcohol (O’Callaghan et al., 1997).

Ajzen (1991) argues that a measure of past behavior may be utilized in a sufficient model, but that this addition may not be significantly related to the prediction of future behavior. He adds that if past behavior is significant, then there are other factors present which accounts for any effect on said behavior (Ajzen, 1991).

Higgins et al. (2005) conducted a study examined the ability of the TPB to mediate the effects of low self-control on alcohol use. The researchers postulated that the TPB would mediate the association that low self-control has with alcohol use. Generally, the self-control theory states that if an individual possesses low self-control, which remains relatively stable over time, they are more inclined to partake in crime and corresponding acts, in this case, alcohol use (Gottfredson & Hirschi, 1990). Undergraduate students were given the questionnaires at two different times, once at baseline and then at a follow-up conducted two weeks later. Measures were used to assess low self-control, intentions, subjective norms, perceived behavioral control, and alcohol use. The investigation concluded that those with low self-control have positive attitudes towards alcohol consumption. Those individuals also reported that important referent others encouraged them to use alcohol, and they had favorable intentions to do so. Low self-control was negatively correlated with perceived behavioral control, e.g. if an individual’s self-
control over alcohol use was low, their perception of control over the behavior decreased as well. Low self-control was also directly linked with attitudes, subjective norms, and perceived behavioral control, but was not directly related to the effect of perceived behavioral control on intentions. (Higgins et al., 2005)

According to the substantial amount of evidence previously mentioned, the TPB has proven to be an important tool in predicting alcohol misuse and binge drinking frequency among a population of adolescents and young adults. The wide support for the TPB is well-documented and is an effective framework to use as a foundation for diverse interventions aimed at reducing our youth’s alcohol consumption and thus decreasing the amount of alcohol-related risks and consequences.

2.5 BRIEF ALCOHOL SCREENING AND INTERVENTION FOR COLLEGE STUDENTS (BASICS) AT THE UNIVERSITY OF TEXAS AT EL PASO

BASICS, which stands for Brief Alcohol Screening and Intervention for College Students, is a theoretically-based brief intervention that uses a harm-reduction approach to alcohol consumption (Dimeff et al., 1999). The program seeks to reduce college students’ risky alcohol consumption and alcohol-related consequences through cognitive-skills based components and Motivational Interviewing (MI) techniques.

The goals of BASICS at UTEP include: (1) to increase the students’ cognitive capacity and awareness to reduce the risk of alcohol-related problems among UTEP students at high risk for heavy or binge drinking; (2) to increase student behavioral capacity and self-efficacy to reduce the risk of alcohol-related problems among UTEP students at high risk for heavy or binge drinking; (3) to reduce the frequency of heavy or binge drinking among UTEP students; and (4) to decrease the number of alcohol-related consequences among UTEP students.

The key features of BASICS include screening and identifying college students who engage in risky alcohol consumption, increasing students’ awareness of risks associated with heavy drinking and the benefits of moderate drinking, enhancing students’ motivation to reduce heavy alcohol consumption,
and developing skills that the students can use to manage themselves in high-risk drinking situations. An additional significant feature of BASICS is the distribution of personalized feedback, where students learn about their own personal alcohol consumption (Dimeff et al., 1999).

BASICS has been found to be effective in reducing students’ binge drinking rates compared to those students who had a different or no intervention (Borsari & Carey, 2000; Murphy, Duchnick, Vuchinich, Davison, Karg, Olson, Smith, & Coffey, 2001).

2.5.1 Methods

Students were first screened during lectures by the Screening Coordinator. The coordinator visited various classes (core classes, elective classes, etc) and spoke briefly about the program and its benefits (personalized feedback, incentives). The students were then given a screening tool to determine eligibility into the program. This screening assessment also asks for contact information (including phone number and e-mail address) in order to contact the student about their eligibility to participate in the BASICS program. After all instruments were filled out and collected, the coordinator then scored each survey. If a student scored an 8 or above (which concludes that that a student is a “high-risk” drinker), their contact information was placed in a binder, where the peer facilitators in turn called or e-mailed students to schedule appointments for intervention sessions.

Once students arrived at the BASICS office, they were greeted by a peer facilitator who briefly explained the day’s events and reminded the student that their participation was confidential and voluntary. After this, the student then completed an assessment battery which included such questionnaires as the Alcohol Use Disorder Identification Test (AUDIT), Daily Drink Questionnaire (DDQ), Rutgers Alcohol Problems Inventory (RAPI), etc. Because of funding agency requirements, the student also completed the Government Performance and Results Act (GPRA), which was conducted by the outside evaluation team.
Following this, students were brought to a conference room where the facilitator conducted the intervention session. During this session, the facilitator reviewed information about alcohol through use of a PowerPoint presentation. This presentation included basic information about how alcohol affects the body physically and mentally, the importance of moderate drinking, the definition of a standard drink and blood alcohol level, average drinking behavior among UTEP students, dispelling myths on how to “sober up,” factors that affect blood alcohol, biphasic effects of alcohol, alcohol tolerance, alcohol and pregnancy, and alcohol myopia.

The intervention session enabled the facilitator to resolve students’ resistance to change through the use of MI techniques. MI seeks to resolve a person’s ambivalence to behavior change (Miller & Rollnick, 2002). The significant element during these sessions was the role of the facilitator to influence the student to interact and teach them skills on how to resist peer pressure to binge drink and to increase their self-efficacy in avoiding doing so.

Students were also given personalized feedback over their own drinking at the end of the PowerPoint presentation. Information that is included in this feedback is extracted from the students’ DDQ and RAPI. A blood alcohol level (BAL) chart, which is customized to the student’s weight and gender, was also given. The facilitator then reviewed all of this information and used it to help the student visualize the amount that he/she was actually drinking. The facilitator also used this time to incorporate MI techniques and discuss possible alternatives to drinking, safety drinking practices, and other topics the student wished to discuss.
Chapter 3: Methods

The purpose of this study was to examine TPB constructs as predictors of behavior change in response to the BASICS intervention. Key TPB concepts include attitudes, subjective norms, perceived behavioral control, and behavioral intentions. The primary objective was to show the efficacy of the TPB constructs attitudes and perceived behavioral control (PBC) to mediate behavior change (i.e. risky alcohol consumption) among college students attending the University of Texas at El Paso.

Three questionnaires were used to examine the efficacy of attitudes, subjective norms, perceived behavioral control and behavioral intentions in predicting behavior change (i.e. risky alcohol consumption). These included the Alcohol Use Disorders Identification Test (AUDIT), Rutgers Alcohol Problems Index (RAPI), and a TPB questionnaire produced for the study at 6 months and 1 year post-intervention. The study was conducted through secondary analysis of data, collected from August 2005 to June 2006 through the BASICS program at the University of Texas at El Paso.

3.1 Participants

The students are college students at the University of Texas at El Paso, which is located on the U.S.-Mexico border. Out of 20,000 enrolled students, 74% are Hispanic (UTEP Student Profile, 2008). The students were all consumers of alcohol who scored an 8 or above on the AUDIT screening. They were recruited into the program by a screening coordinator who visited their classes and administered the AUDIT. All students joined voluntarily.

3.2 Measures

3.2.1 Alcohol Use Disorders Identification Test (AUDIT)

The AUDIT is a tool that is used to determine identify individuals who have dangerous patterns of alcohol consumption (Babor, Biddle-Higgins, Saunders, & Monteiro, 2001). The AUDIT asks questions regarding alcohol consumption over the past 30 days, which is an adjustment to the regular AUDIT (which asks about alcohol consumption over the past year) made at the beginning of the study.
(included in Appendix A). This change helped to control for history effects. The answers were scored on a range of 0 (i.e. no risk) to 40 (extremely high risk). According to Babor et al. (2001), scores between 0 and 7 indicate low risk for alcohol-related problems; 8-15 is medium risk; 16-40 are at high risk. Students had a score of 8 or above for eligibility into the BASICS program.

3.2.2 Rutgers Alcohol Problems Index (RAPI)

The RAPI contains twenty-three items that ask the number of times a student experienced a particular consequence (e.g. missed a day, or part of a day, of school or work because of drinking) as a result of alcohol consumption over the past 3 months (White & Labovivie, 1989) (included in Appendix B). Students were asked to check the corresponding box; choices included: never, 1-2 times, 3-5 times, 6-10 times, or more than 10 times.

3.2.3 TPB Constructs

The following constructs were measured using the TPB portion of the intake, 6 month, and 1 year assessment surveys (Appendix C).

3.2.3.1 Attitudes Towards Binge Drinking

Attitudes towards responsible drinking, binge drinking, and monitoring one’s drinking were measured. These questions utilized a 7-point semantic differential scale “Responsible drinking is: harmful/beneficial;” “Responsible drinking is: pleasant/unpleasant, good/bad, worthless/valuable, enjoyable/unenjoyable;” Binge drinking is harmful/beneficial, good/bad, worthless/valuable, enjoyable/unenjoyable;” “ Monitoring your drinking is: harmful/beneficial, good/bad, worthless/valuable, enjoyable/unenjoyable;” and “Drinking 5 or more drinks in one sitting is: harmful/beneficial, good/bad, worthless/valuable, enjoyable/unenjoyable;” For this study, only attitudes towards binge drinking at assessment and follow-up were used for data analyses.
3.2.3.2 Subjective Norms

Five items were used to measure this construct. “Family members important to me have suggested I cut down on my drinking.” “Friends who are important to me encourage me to drink heavily.” “If family members who are important to me knew how much I really drink they would be disappointed in me.” “Most people important to me drink moderately or not at all.” “Most people important to me engage in drinking.” Answers ranged on a 7-point scale of definitely true (score of 1) to definitely false (score of 7).

3.2.3.3 Perceived Behavioral Control Over Binge Drinking

The following four items that assessed PBC: “I feel confident I can moderate my drinking in the next 30 days.” “If I wanted to, I could avoid binge drinking in the next 30 days.” “I can resist pressure to drinking from my friends in the next 30 days.” “I can avoid situations where heavy drinking is likely to occur in the next 30 days.” This section also used a 7-point scale which ranged from strongly agree (+1) to strongly disagree (+7).

3.2.3.4 Behavioral Intentions to Binge Drink

Three items measured behavioral intentions to either binge drink or avoid driving after binge drinking. These items included: “I plan to drink responsibly or not at all in the next 30 days;” “I plan to binge drink (i.e. consume 5 or more drinks in one sitting) in the next 30 days;” “In the next 30 days, I will avoid driving a car after consuming 5 or more drinks in one sitting.” Responses were extremely unlikely, quite unlikely, slightly unlikely, neither, slightly likely, quite likely, and extremely likely (scored 1 through 7, respectively).

3.3 Procedures

3.3.1 Recruitment

As noted, data were previously collected. The Screening Coordinator recruited students by obtaining contact to professors throughout the university. The coordinator scheduled times during these
professors’ classes to briefly explain the BASICS program and distribute the AUDIT. Once the surveys were scored, students were contacted via phone or e-mail by the program’s peer facilitators. Students who agreed to participate were then scheduled for the assessment and brief intervention.

Other methods of recruitment include health fairs, posting flyers throughout the campus, and also targeting the athletics department, student and Greek organizations. The BASICS staff also accepted referrals and walk-ins. During health fairs on the campus, members of the BASICS staff were able to screen a large amount of students at one time and determine whether they were eligible to participate at that time.

3.3.2 Intervention Session & Six Months Follow-Up

Once in the office, students were asked to complete an assessment battery which included the AUDIT, RAPI, and TPB questionnaires. Students were offered a $20 gift card at assessment as an incentive to participate as well as personalized feedback on their drinking patterns. Data was collected by an independent evaluation company.

Between five and seven months, students were notified for their six month follow-up via telephone or e-mail by program staff. Students were either asked to come into the office to complete the AUDIT, RAPI, and TPB questionnaires or were asked to answer these questions over the phone. Once completed, the student received an additional $20 gift card. At one year follow-up, the same procedure was followed and they also received $20 gift cards at this time period.

3.3.3 Data Analysis

SPSS was used to conduct multiple regression analyses to test for mediation effects. Bivariate correlations were also used to test intercorrelations between TPB variables and drinking variables (AUDIT & RAPI scores) at assessment and six months follow-up. A mediator is defined as an external variable that has a significant relationship between an independent variable and the dependent, or outcome, variable (Baron & Kenny, 1986)). A path diagram is included in Figure 3.1.
Figure 3.1 Mediation Path Diagram (Baron & Kenny, 1986)

Following the mediation figure above, it illustrates that in order for mediation to occur, according to Baron and Kenny (1986), three relationships must be present: first, the independent variable should have an effect on the mediator (a); second, this independent variable should have an effect on the outcome variable (c); and lastly, the mediator should affect the outcome, or dependent variable (b). If we hold the mediator variable constant, then the effect of the independent variable on the dependent variable should be reduced. Complete, or perfect mediation, would show that the independent variable has no effect on the outcome variable once the mediator is taken out of the equation (Baron & Kenny, 1986).

For this study, the TPB constructs (attitudes [ATT], subjective norms [SN], perceived behavioral control [PBC], and behavioral intentions [BI]) act as the mediating variables. Because AUDIT and RAPI scores were examined at two different time periods (at assessment and at six month follow-up), these scores acted as the independent and outcome variables. An example of this is included in Figure 3.2.
AUDIT and RAPI scores convey alcohol consumption and alcohol-related problems, respectively. AUDIT and RAPI scores should show an effect on the same scores six months post-intervention. Since mediation effects of the TPB constructs will be tested, there should also be a significant relationship between these and AUDIT and RAPI scores at follow-up. Ideally, if the TPB constructs were to be excluded from the equation, then AUDIT and RAPI scores should not show any change or show a reduced change from assessment to follow-up, which establishes mediation (Baron & Kenny, 1986).
Chapter 4: Results

4.1 Data Reduction

A single measure of attitudes toward binge drinking was created by reverse scoring the three negatively ordered semantic differential items and then averaging all five of the items to create a single attitude score that ranged from -3 to +3, with negative numbers indicating negative attitudes toward binge drinking and positive values indicating positive attitudes toward binge drinking. This procedure was followed at both the assessment and six month follow-up time periods. Alpha reliability coefficients were .85 and .87 at assessment and six months follow-up, respectively.

Because the items for subjective norms did not fit together reliably into a single total score (alpha = .21), two single item scales that best represented the concept of subjective norms were used: “Friends who are important to me encourage me to drink heavily” and “Most friends important to me engage in drinking” (α=.21).

For PBC, all four items were tested and combined into a total score. These items obtained reliability scores of α=.75 and α=.79, at assessment and six months follow-up, respectively.

For AUDIT scores, high reliability scores were also found at assessment and six months follow-up (α =.78; α = .71, respectively).

RAPI total scale scores were calculated by summing responses to all the individual items. These scores were α=.86 at assessment and α = .85 at six month follow-up. Because raw RAPI scores were positively skewed, square-root transformation was applied to the raw values and the transformed values were used in all subsequent analyses.

4.2 Descriptive Statistics

Means and standard deviations (or percentages) for all the major study variables are contained in Table 1. The average age in this sample was approximately 21 years of age, and males represented a larger portion of the population than females. Most participants reported Hispanic ethnicity.
Table 1 compares the main variables of interest at two time points, once at assessment (i.e., pre-test) and again at six months follow up (i.e., post-test). As shown, attitudes toward binge drinking became more negative at six months post-intervention. In addition, subjective norms did not show any significant changes from baseline to follow-up. Perceived behavioral control showed increases at six months follow-up. Behavioral intentions showed significant decreases from baseline to follow-up. AUDIT and RAPI scores, which measured alcohol consumption and alcohol-related problems, respectively, also showed significant decreases from pre- to post-test.

Generally, these findings suggest that the BASICS intervention had the intended effects on the main outcome variables including the AUDIT and the RAPI. Specifically, both decreased in response to the intervention. The intervention also had the intended effect on several of the mediating variables including attitudes, PBC, and intentions. Specifically, attitudes towards binge drinking significantly became more negative at six months follow-up. Similarly, behavioral intentions to binge drink also reduced from assessment to six months follow-up. Alternatively, perceived behavioral control over binge drinking strengthened at six months follow-up. AUDIT and RAPI scores also decreased from assessment to follow-up, suggesting that students’ reported less alcohol consumption and alcohol-related problems. The exceptions to this pattern were the results for subjective norms, where neither variable changed as a function of the intervention.
### Table 1: Descriptives table displaying Means/Percentages of age, gender, ethnicity, TPB constructs, AUDIT, and RAPI scores at assessment and 6 months follow-up

<table>
<thead>
<tr>
<th>Mean/Percentage</th>
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<th>Eta²</th>
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<tr>
<td>Assessment</td>
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<td></td>
</tr>
<tr>
<td>Age</td>
<td>20.77 (3.11)</td>
<td>-</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
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<tr>
<td>Female</td>
<td>40%</td>
<td>-</td>
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<td>n/a</td>
</tr>
<tr>
<td>Male</td>
<td>60%</td>
<td>-</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Percent Hispanic Ethnicity</td>
<td>85%</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Attitude toward Binge drinking</td>
<td>-1.02 (1.33)</td>
<td>-1.60 (1.33)</td>
<td>26.08***</td>
<td>.17</td>
</tr>
<tr>
<td>SN/Friends encourage heavy drinking</td>
<td>-1.08 (2.00)</td>
<td>-1.37 (1.79)</td>
<td>2.31</td>
<td>.02</td>
</tr>
<tr>
<td>SN/Friends consume alcohol</td>
<td>1.40 (1.69)</td>
<td>1.11 (1.89)</td>
<td>2.83</td>
<td>.02</td>
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<tr>
<td>PBC</td>
<td>1.45 (1.42)</td>
<td>1.82 (1.39)</td>
<td>8.44*</td>
<td>.06</td>
</tr>
<tr>
<td>Behavioral Intentions</td>
<td>4.18 (2.07)</td>
<td>3.39 (2.03)</td>
<td>18.75***</td>
<td>.13</td>
</tr>
<tr>
<td>AUDIT</td>
<td>11.47 (5.38)</td>
<td>6.46 (4.27)</td>
<td>150.72***</td>
<td>.53</td>
</tr>
<tr>
<td>RAPI</td>
<td>2.45 (1.89)</td>
<td>2.13 (1.42)</td>
<td>9.02*</td>
<td>.06</td>
</tr>
</tbody>
</table>

*** p < .001  
** p < .01  
*  p < 05

### 4.3 Inferential Statistics

#### 4.3.1 Correlations between demographic variables, TPB variables, and Drinking Variables.

Table 2 shows the correlations between the demographic variables, TPB variables, and alcohol-related variables. As shown, attitudes toward binge drinking at assessment and follow-up were negatively correlated with age, suggesting that as participants’ ages increased, attitudes toward binge
drinking became more negative. Additionally, friends encourage me to binge drink and gender were negatively related, signifying that a higher number of males reported that friends encouraged them to binge drink. Meanwhile, AUDIT and RAPI scores were positively related to age, indicating that risky alcohol consumption and alcohol-related problems increased with age.

| Table 2: Correlations between the demographic variables, TPB variables, and alcohol-related variables |
|-------------------------------------------------|-----------------|-----------------|
| Age                                             | Gender          | Hispanic/Latino |
| Attitudes Binge Drinking (A)                    | -.08            | -.22***         |
| Friends Encourage (A)                           | .06             | -.15*           |
| Most Drink (A)                                  | .07             | .05             |
| PBC (A)                                         | .04             | .05             |
| BI to Binge Drink (A)                           | .00             | -.04            |
| AUDIT (A)                                       | .17**           | -.03            |
| RAPI SQRT (A)                                   | .14*            | .07             |
| Attitudes Binge Drinking (6)                    | -.05            | -.22**          |
| Friends Encourage (6)                           | .02             | -.09            |
| Most Drink (6)                                  | -.08            | .08             |
| PBC (6)                                         | -.02            | .14             |
| BI to Binge Drink (6)                           | .10             | -.14            |
| AUDIT (6)                                       | .15             | -.14            |
| RAPI SQRT (6)                                   | .02             | .05             |

Note:  (A) = Assessment, N = 203-205; (6) = 6 months follow up, N = 134;

** p< .01; * p < .05.
4.3.2 Intercorrelations of TPB and Drinking Variables.

Table 3 shows the intercorrelations of the TPB and drinking variables. As displayed, attitudes toward binge drinking correlated with subjective norms item “friends encourage me to binge drink,” as well as PBC, behavioral intentions, AUDIT scores, and RAPI scores all at assessment. Similarly, attitudes at assessment were positively correlated with attitudes, PBC, AUDIT, and RAPI scores all at six month follow-up. Attitudes toward binge drinking at assessment was negatively correlated with PBC, which illustrates that as attitudes become more positive towards binge drinking, perceived behavioral control decreases.

The subjective norms variable “friends important to me encourage me to binge drink,” negatively correlated with PBC. This variable was positively correlated with behavioral intentions, AUDIT, and RAPI scores at assessment, but was only positively correlated with itself and AUDIT scores at six month follow-up. “Most people important to me drink” at assessment only correlated with itself at six month follow-up.

PBC at assessment negatively correlated with behavioral intentions, AUDIT, RAPI scores at assessment. Moreover, the variable was negatively correlated with attitudes, “most people important to me drink,” behavioral intentions, AUDIT, and RAPI scores at follow-up. Its only positive correlation at follow-up was with PBC.

Behavioral intentions positively correlated to all variables except “most people important to me drink.” Behavioral intentions had an additional negative correlation with PBC.

AUDIT scores were positively correlated to RAPI scores at assessment, and all other variables at follow-up except for both subjective norms variables. RAPI scores positively correlated to attitudes, “most people important to me drink,” behavioral intentions, AUDIT, and RAPI scores at follow-up.

The pattern of intercorrelations at six months follow up was largely similar to the pattern at
Table 3: Intercorrelations between TPB variables and alcohol-related variables at assessment and six months follow-up.

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<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Attitudes Binge Drinking (A)</td>
<td>.23**</td>
<td>-.02</td>
<td>-.39**</td>
<td>.54**</td>
<td>.26**</td>
<td>.25**</td>
<td>.51**</td>
<td>.13</td>
<td>.07</td>
<td>.25**</td>
<td>.35**</td>
<td>.32**</td>
<td>.19*</td>
</tr>
<tr>
<td>2. Friends Encourage (A)</td>
<td>1.00</td>
<td>.09</td>
<td>-.29**</td>
<td>.25**</td>
<td>.30**</td>
<td>.27**</td>
<td>.17</td>
<td>.28**</td>
<td>.10</td>
<td>-.14</td>
<td>.10</td>
<td>.17*</td>
<td>.09</td>
</tr>
<tr>
<td>3. Most people drink (A)</td>
<td>1.00</td>
<td>-.10</td>
<td>.02</td>
<td>.06</td>
<td>.07</td>
<td>-.07</td>
<td>.11</td>
<td>.41**</td>
<td>.01</td>
<td>.09</td>
<td>.14</td>
<td>.04</td>
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<tr>
<td>4. PBC (A)</td>
<td>1.00</td>
<td>-.50**</td>
<td>-.46**</td>
<td>-.39**</td>
<td>-.36**</td>
<td>-.15</td>
<td>-.19*</td>
<td>.47**</td>
<td>-.36**</td>
<td>-.43**</td>
<td>-.32**</td>
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<tr>
<td>5. Behavioral Intentions to Binge Drink (A)</td>
<td>1.00</td>
<td>.41**</td>
<td>.35**</td>
<td>.42**</td>
<td>.20*</td>
<td>.12</td>
<td>.32**</td>
<td>.48**</td>
<td>.41**</td>
<td>.19*</td>
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<td>6. AUDIT (A)</td>
<td>1.00</td>
<td>.70**</td>
<td>.25**</td>
<td>.06</td>
<td>.11</td>
<td>.28**</td>
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<td>.50**</td>
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<td>7. RAPI SQRRT (A)</td>
<td>1.00</td>
<td>.21*</td>
<td>.04</td>
<td>.17*</td>
<td>-.16</td>
<td>.25**</td>
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<td>.57**</td>
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<td>8. Attitudes Binge Drinking (6)</td>
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<td>.19*</td>
<td>.20*</td>
<td>.45**</td>
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<td>9. Friends Encourage (6)</td>
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<td>.21**</td>
<td>-.17*</td>
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<td>10. Most People Drink (6)</td>
<td>1.00</td>
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<td>.24**</td>
<td>.21**</td>
<td>.09</td>
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<td>11. PBC (6)</td>
<td>1.00</td>
<td>-.45**</td>
<td>-.57**</td>
<td>-.35**</td>
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<tr>
<td>12. Behavioral Intentions to Binge Drink (6)</td>
<td>1.00</td>
<td>.59**</td>
<td>.32**</td>
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<tr>
<td>13. AUDIT (6)</td>
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<td>14. RAPI SQRRT(6)</td>
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</table>

Note: (A) = Assessment, N = 203-205; (6) = 6 months follow up, N = 134; ** p < .01; * p < .05.
assessment, with the notable exception that most people drink was correlated with most TPB variables and AUDIT scores at 6 months but not at assessment.

4.3.3 Regression Analyses predicting AUDIT and RAPI Scores from TPB Variables

Table 4 presents the results of multiple regression analyses predicting changes in behavioral intentions to binge drink, and changes in drinking behavior as measured by the AUDIT questionnaire and drinking related problems as assessed by the RAPI questionnaire. For Step 1 of these analyses, behavioral intentions to binge drink at 6 months follow up served as the dependent variable, whereas attitudes toward binge drinking and PBC over drinking served as the primary independent variables. Because they failed to show significant changes over time, the subjective norm variables were omitted from these analyses. Also, because the study was interested in relating changes in attitudes and PBC to changes in BI, these analyses also controlled for pretest levels on all variables (omitted from Table 4). In these analyses, the resulting residuals, and associations among them, reflect corresponding changes.

As shown in the top portion of Table 4 (Step 1), changes in attitudes toward binge drinking were positively related to changes in behavioral intention to binge drink. This effect indicates that as students’ attitudes became more negative toward binge drinking, they showed a corresponding decrease in behavioral intentions to binge drink. Step 1 of Table 4 also shows that changes in perceived behavioral control over binge drinking were negatively related to behavioral intentions to binge drink. This effect indicates that as students’ perceived behavioral control over binge drinking increased, their behavioral intentions to binge drink decreased.

As shown in by Step 2A, perceived behavioral control was negatively related to changes in AUDIT scores, suggesting that as the students’ perceived behavioral control over binge drinking increased, their AUDIT scores decreased. Behavioral intentions to binge drink positively related to changes in AUDIT scores. This means that as one’s behavioral intentions to binge drink, and then their AUDIT scores reduced as well, signifying that the students reported consuming less alcohol.
For Step 2B, changes in perceived behavioral control negatively related to changes in RAPI scores. This single significant relationship indicates that as a student’s perceived behavioral control increased, then their RAPI score (i.e. reported alcohol-related problems) decreased. These results show that the effect of attitudes on AUDIT was completely mediated by behavioral intentions to binge drink. The results also show that behavioral intentions partially mediated the effect of perceived behavioral control on AUDIT scores.

Table 4: Results of multiple regression analyses predicting Behavioral Intentions to binge drink, actual drinking as assessed by AUDIT scores, and alcohol-related problems as assessed by RAPI scores

<table>
<thead>
<tr>
<th>Step 1. Change in Behavioral Intentions to Binge Drink.</th>
<th>Beta</th>
<th>T</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adj. R-Square = .48, F(5, 123) = 24.32, p &lt; .001</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change in Attitudes toward Binge Drinking</td>
<td>.51</td>
<td>6.16</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Change in Perceived Behavioral Control</td>
<td>-.17</td>
<td>-2.18</td>
<td>.03</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Step 2A. Change in AUDIT Scores</th>
<th>Beta</th>
<th>T</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adj. R-Square = .56, F(7, 121) = 23.95, p &lt; .001</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change in Attitudes toward Binge Drinking</td>
<td>.12</td>
<td>1.42</td>
<td>.16</td>
</tr>
<tr>
<td>Change in Perceived Behavioral Control</td>
<td>-.29</td>
<td>-3.95</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Change in Behavioral Intention to Binge Drink</td>
<td>.29</td>
<td>3.45</td>
<td>.001</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Step 2B. Change in RAPI Scores</th>
<th>Beta</th>
<th>T</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adj. R-Square = .39, F(7, 120) = 12.68, p &lt; .001</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change in Attitudes toward Binge Drinking</td>
<td>.03</td>
<td>.30</td>
<td>.76</td>
</tr>
<tr>
<td>Change in Perceived Behavioral Control</td>
<td>-.25</td>
<td>-2.88</td>
<td>.005</td>
</tr>
<tr>
<td>Change in Behavioral Intention to Binge Drink</td>
<td>.14</td>
<td>1.40</td>
<td>.17</td>
</tr>
</tbody>
</table>

Note: All analyses control for pretest (i.e., assessment) values (not shown).
4.3.4 Path Analysis Models

For the final analysis, I also constructed two path analysis models using hierarchical multiple regression techniques. For these analyses, I examined relations among TPB variables and AUDIT and RAPI scores at the six months follow-up period, while controlling for values at assessment for the same variables. By controlling for baseline values in this manner, these analyses essentially describe how changes in predictor variables (i.e., attitudes, subjective norms, and PBC) correlated with changes in mediator (i.e., behavioral intention) and outcome variables (AUDIT and RAPI, respectively). These models specified relationships among changes in TPB concepts and subsequent changes in AUDIT and RAPI scores. For example, these results convey the degree to which students who reported significant shifts in attitudes, presumably because of participation in the program, also experienced corresponding shifts in behavioral intentions to binge drink and drinking behavior as represented by AUDIT scores. The model for AUDIT scores is contained in Figure 4.1.

![Figure 4.1 Path Analysis Model for AUDIT Scores](image)
As shown, attitudes positively correlated with behavioral intentions to binge drink. This suggests that as attitudes became more negative towards binge drinking, students’ then reduced their behavioral intentions to binge drink. PBC was negatively correlated with behavioral intentions to binge drink. This result indicates that as PBC over binge drinking became increased, students reported to have reduced behavioral intentions to binge drink. PBC was additionally directly positively related AUDIT scores. Also as shown, behavioral intentions were positively related to AUDIT scores indicating that as behavioral intentions to binge drink increased so did AUDIT scores. The model shows that attitudes had only an indirect effect on AUDIT scores, one that was mediated by behavioral intentions. Specifically, as attitudes toward binge drinking declined, so did behavioral intentions to binge drink. Perceived behavioral control, in contrast showed both direct and indirect associations with AUDIT scores. The direct effect on AUDIT scores indicated that as PBC increased, AUDIT scores decreased. The indirect effect indicated that as PBC increased, behavioral intentions to binge drink were reduced. In simple terms, this tells us that the changes in attitudes, perceived behavioral control, and behavioral intentions to binge drink occurred within the same individuals. In other words, those students who changed their attitudes towards binge drinking, perceived behavioral control, and behavioral intentions to binge drink also showed corresponding changes in AUDIT scores.

The path analysis model for RAPI scores showed a very important difference than the AUDIT model. The same relationships exist between attitudes, PBC, and behavioral intentions. The most notable distinction is the lack of any relation between behavioral intentions and RAPI scores. As Ajzen’s TPB tells us, behavioral intentions should mediate changes in behavior (in this case alcohol-related problems), but there was no significant relationship between the two. This means that attitudes towards binge drinking are not indirectly related to RAPI scores. PBC does, however, have a direct effect on RAPI scores, but does not hold true for the indirect effect. The model for RAPI scores is contained in Figure 4.2.
Figure 4.2 Path Analysis Model for RAPI Scores
Chapter 5: Discussion

The purpose of this study was to examine the Theory of Planned Behavior constructs and their ability to predict alcohol consumption and alcohol-related problems six months after students participated in an alcohol-risk reduction program. Overall, the results supported use of the model for predicting changes in alcohol consumption and to a lesser extent, alcohol-related problems. First, the BASICS intervention was found to have a significant effect on students’ attitudes towards binge drinking, perceived behavioral control, and behavioral intentions to binge drink. Consistent with the intent of the BASICS program activities, attitudes toward binge drinking became more negative, PBC over drinking increased, and intentions to binge drink declined. Second, particularly related to the central focus of this paper, changes in attitudes, PBC, and behavioral intentions were all associated with changes in drinking levels as indicated by AUDIT scores. Moreover, changes in PBC were associated with fewer alcohol-related problems as indicated by the RAPI. In addition to supporting the TPB, the results from this study are consistent with other studies conducted by Norman et al (1998), Norman and Conner (2006), Kuther and Higgins-D’Alessandro (2003), Higgins and Marcum (2005), and others previously cited.

The most unique aspect of the present study, however, was its ability to assess intervention-related changes in the mediating variables from the TPB and actual alcohol-related behaviors, and its ability relate changes in the mediating concepts to changes in behavior. Overall, the results of this study suggest that the BASICS program produces changes in attitudes and perceived behavioral control, and changes in these variables are related to subsequent changes in alcohol consumption and alcohol-related problems.

Although the findings for attitudes and PBC aspects of the TPB were consistent with theory and research in this area, the study observed no changes in subjective norm variables and these variables did not predict intentions or AUDIT or RAPI Scores. Specifically, the measures of subjective norms
(“Friends who are important to me encourage me to binge drink” and “Most people important to me engage in drinking”) remained unchanged over the course of six months. This finding suggests either indicating that students’ perceptions of peers didn’t change or that the measures used to assess such change were not sensitive to it. Regardless, subjective norms did not play a significant role in the present models of behavior change. Subjective norms is still an important feature of the TPB, but in this study subjective norms variables were not impacted by the brief duration of the intervention. Overall, this pattern of results for subjective norms is not surprising, particularly since the BASICS program activities are directed more toward intra-individual change (e.g., attitudes, PBC, expectancies, behavioral skills) rather than interpersonal peer group change.

Other interesting findings that emerged from the data include the significant correlations between age, gender, and the TPB constructs. For example, older students actually reported higher alcohol consumption rates and alcohol-related problems than did younger students. This finding is inconsistent with other research showing that as students get older, they normally “mature out” of their heavy drinking patterns (Dimeff et al, 1999). This might suggest that “maturing out” does not occur among these particular students, who are all consumers of alcohol. A second possible reason for this finding is that mean age in this sample was approximately 21 years of age, which signifies that students who were 21 at the time may have consumed greater amounts because they were legally able to do so. Another interesting finding was that males reported more positive attitudes towards binge drinking, thus reporting higher alcohol consumption rates. Additionally, males were more likely to report that most of their friends encouraged them to binge drink, indicating greater subjective normative pressure on men relative to women. Finally, Hispanic/Latino ethnicity did not correlate significantly with any of the study variables. This finding indicates that the BASICS intervention was suitable for the largely Hispanic/Latino population.
As aforementioned, the TPB has been used successfully applied to alcohol-related research in the past. This present study further found that the TPB effectively predicted AUDIT scores, or alcohol consumption, and in particular predicted changes in these outcomes. The findings convey that behavioral intentions mediate relationships between attitudes and AUDIT as well as PBC and AUDIT. PBC also directly predicted AUDIT scores. On the other hand, the same effect was not seen when predicting RAPI scores, or alcohol-related problems. There is no direct effect of behavioral intentions in predicting RAPI scores. Instead, there was only a direct association (i.e., not mediated by intention) between increased PBC and alcohol-related problems.

Possible reasoning for this result is that the AUDIT measures alcohol consumption, which is more similar to the behavior in question (i.e. binge drinking), and more similar to how the TPB questions were phrased, so it should be better predicted by the TPB. Specifically, the TPB questions were designed to assess beliefs and intentions about drinking behavior rather than the consequences of given behavior. A better place in the model for alcohol-related problems, or RAPI scores, might be after AUDIT scores in the model, capturing the idea that if one drinks more, then higher reports of alcohol-related problems might be expected, rather than behavioral intentions alone. Behavioral intentions to binge drink should not result in a larger amount of alcohol-related problems. Rather, alcohol-related problems are an outcome of alcohol consumption and not behavioral intentions to binge drink.

5.2 IMPLICATIONS FOR INTERVENTIONS

Overall, the results suggest that the skill-building activities utilized in the intervention session aided in increasing students’ perceived behavioral control and not only were those changes related to alcohol consumption (AUDIT), but also related to reduced problems (RAPI). An example of a skill-building activity included a set time when facilitators, while using motivational interviewing techniques, asked students to describe a situation in which they would attempt to resist high-risk drinking situations and peer pressure from friends, thereby increasing self-efficacy or perceived behavioral control.
Another useful component that may have increased PBC included discussing alternatives to drinking and safer drinking practices with the students.

Other activities may have helped to change attitudes, include increasing knowledge about alcohol, its physical and psychological effects, myths, etc. Another potentially attitude changing aspect of the intervention session was personalized feedback. Students were able to see their alcohol consumption and alcohol-related problems compared to the average student’s as well as learn about blood alcohol levels which was used to track their own drinking. The results suggest that these activities lead to changes in attitudes towards binge drinking and these changes, in turn, related to changes in AUDIT and RAPI scores.

The BASICS intervention utilizes cognitive behavioral self-management strategies, motivational interviewing techniques, and uses harm reduction principles (Dimeff et al, 1999). The present results suggest that these components alone or in combination have major effects on attitudes, perceived behavioral control, and behavioral intentions to binge drink. Future research might assess how specific activities that are part of the BASICS program affect various TPB components. For example, research could examine whether personalized feedback does in fact have an on attitudes as described above.

5.3 Implications for Program Evaluation
The TPB constructs can be effectively used for evaluation of program impact and may be used as intermediate outcomes that relate program activities to behavior changes.

5.4 Limitations
The study had several limitations. The largest limitation in this study was the lack of a control group. The central issue is causality. Without the ability to compare the treatment group to a control group, it is difficult to completely determine whether the intervention attributed to any changes within this sample.
A second limitation is that all outcome and mediational variables were measured at six months follow-up. Ambiguous temporal precedence, which is a threat to internal validity, is present because mediating variables (attitudes, subjective norms, PBC, and behavioral intentions) were assessed at baseline and six months follow-up, the same time as the outcome variables (AUDIT and RAPI scores). Although the results were consistent with theory, the results cannot determine whether changes in attitudes, PBC and behavioral intentions led to changes in behavior, as has been suggested in this paper, or vice versa, whether changes in behavior led to changes in attitudes, PBC, and behavioral intentions. To represent true causal order of the intervention on changes post-intervention, ideally changes in mediators should be seen before changes in the outcome variables. In this study, it may remain unclear that the behavior changed before or after the mediators changed.

Finally, all variables were assessed via self-report could be biased or students’ may have completed the questionnaires to please researchers. The behavior in question, alcohol consumption, is also self-reported.

5.5. Suggestions for Future Research

The addition of a control group would aid in strengthening the assumption that the intervention was responsible for changes in all outcome variables. Also, future research should add measures of mediating variables (TPB constructs) in between baseline and follow-up. Because this study only examined one group who received the intervention, it would be ideal to also follow those who were ineligible for the program. Utilizing a regression discontinuity design may assist in increasing strength of causal inference.

The TPB has been successfully applied to all types of health-related research. Health promotion may benefit in using the TPB as a foundation for future health-related programs as a proven method in predicting behavior.
5.6 SUMMARY AND CONCLUSIONS

Results showed that among students who participated in the BASICS intervention, AUDIT and RAPI scores significantly reduced from baseline to six months follow-up. These reductions in AUDIT and RAPI scores are credited to changes in attitudes towards binge drinking, PBC, and behavioral intentions to binge drink. The BASICS intervention, which utilizes cognitive-behavioral approaches to curb risky alcohol consumption among other activities, may be strongly attributed to changes in TPB components six months post-intervention. Subjective norms components unsuccessfully displayed significant changes over time. This study found the TPB as a quality device in predicting alcohol consumption and alcohol-related problems among a sample of mostly Hispanic college students. The TPB also proved to serve as an effective foundation as program evaluation tool. The TPB constructs effectively acted as mediators of behavior change, changes that resulted from the BASICS intervention.
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Appendix A: Alcohol Use Disorders Identification Test

Lifestyle Enhancement Center
Assessment Questionnaire

Please complete the following demographic information (Please mark an X in the box corresponding to your answer)

1. **What is your gender?**
   - Male..........................................................
   - Female....................................................

2. **What is your race? (Mark all that apply)**
   - White.........................................................
   - African American....................................
   - Asian.........................................................
   - American Indian........................................
   - Native Hawaiian/Pacific Islander............... 
   - Alakea Native...........................................

3. **Are you Hispanic or Latino?**
   - Yes...........................................................
   - No...........................................................

4. **Where are you living now?**
   - With Parents ...........................................
   - Own/Rent Apartment, Room, House...........
   - Miner Village/Dorms..................................
   - Someone else's apartment/house............. 
   - Other....................................................

5. **What is your current place of residence?**
   - El Paso County...................................
   - Dona Ana County.................................
   - Juarez..................................................
   - Other....................................................

6. **What is your classification?**
   - Freshman...........................................
   - Sophomore...........................................
   - Junior..................................................
   - Senior................................................
   - Graduate Student................................

7. **If female, are you currently pregnant?**
   - Yes..........................................................
   - No..........................................................
   - Don't know............................................

The following questions are about the past 3 months. (Please mark an X in the box corresponding to your answer)

8. **How often do you have a drink containing alcohol?**
   - Never...................................................
   - 2 to 3 times a week................................
   - Monthly or less....................................
   - 4 or more times a week.........................
   - 2 to 4 times a month...........................

9. **How many drinks containing alcohol do you have on a typical day when you are drinking?**
   - None....................................................
   - 5 or 6...................................................
   - 1 or 2..................................................
   - 7 to 9..................................................
   - 3 or 4..................................................
   - 10 or more.........................................

10. **How often do you have six or more drinks on one occasion?**
    - Never..................................................
    - Weekly................................................
    - Less than monthly................................
    - Daily or almost daily.........................
    - Monthly............................................

11. **How often during the past 3 months have you found that you were not able to stop drinking once you had started?**
    - Never..................................................
    - Weekly................................................
    - Less than monthly................................
    - Daily or almost daily.........................
    - Monthly............................................

12. **How often during the past 3 months have you failed to do what was normally expected from you because of drinking?**
    - Never..................................................
    - Weekly................................................
    - Less than monthly................................
    - Daily or almost daily.........................
    - Monthly............................................

13. **How often during the past 3 months have you needed a first drink in the morning to get yourself going after a heavy drinking session?**
    - Never..................................................
    - Weekly................................................
    - Less than monthly................................
    - Daily or almost daily.........................
    - Monthly............................................

14. **How often during the past 3 months have you had a feeling of guilt or remorse after drinking?**
    - Never..................................................
    - Weekly................................................
    - Less than monthly................................
    - Daily or almost daily.........................
    - Monthly............................................

15. **How often during the past 3 months have you been unable to remember what happened the night before because you had been drinking?**
    - Never..................................................
    - Weekly................................................
    - Less than monthly................................
    - Daily or almost daily.........................
    - Monthly............................................
16. Have you or someone else been injured as a result of your drinking?
   - No
   - Yes, but not in the past 3 months
   - Yes, during the past 3 months

17. Has a relative or friend, or a doctor or other health worker been concerned about your drinking or suggested you cut down?
   - No
   - Yes, but not in the past 3 months
   - Yes, during the past 3 months
Appendix B: Rutgers Alcohol Problems Index

Different things happen to people while they are drinking ALCOHOL or as a result of their ALCOHOL use. Some of these things are listed below. Please indicate how many times each has happened to you during the last 3 months while you were drinking ALCOHOL or as the result of your ALCOHOL use. Place an X in the box that corresponds to your answer.

How many times did the following things happen to you while you were drinking alcohol or because of your alcohol use during the last 3 months?

<table>
<thead>
<tr>
<th>Event</th>
<th>Never</th>
<th>1-2 times</th>
<th>3-5 times</th>
<th>6-10 times</th>
<th>More than 10 times</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Not able to do your homework or study for a test</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>B. Got into fights, acted bad, or did mean things</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>C. Missed out on other things because you spent too much money on alcohol</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>D. Went to work or school high or drunk</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>E. Caused shame or embarrassment to someone</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>F. Neglected your responsibilities</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>G. Relatives avoided you</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>H. Felt that you needed more alcohol than you used to use in order to get the same effect</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>I. Tried to control drinking by trying to drink only at certain times of the day or certain places</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>J. Had withdrawal symptoms, that is, felt sick because you stopped or cut down on drinking</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>K. Noticed a change in your personality</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>L. Felt that you had a problem with alcohol</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>M. Missed a day (or part of a day) of school or work</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>N. Tried to cut down or quit drinking</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>O. Suddenly found yourself in a place that you could not remember getting to</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>P. Passed out or fainted suddenly</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Q. Had a fight, argument, or bad feelings with a friend</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>R. Had a fight, argument, or bad feelings with a family member</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>S. Kept drinking when you promised yourself not to</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>T. Felt you were going crazy</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>U. Had a bad time</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>V. Felt physically or psychologically dependent on alcohol</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>W. Was told by a friend or neighbor to stop or cut down drinking</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
Appendix C: Theory of Planned Behavior Questionnaire

Please answer the following questions regarding drinking using the following scale ranging from “1” Extremely Unlikely to “7” Extremely Likely (Please place an X in the box corresponding to your answer)

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extremely Unlikely</td>
<td>Quite unlikely</td>
<td>Slightly unlikely</td>
<td>Neither</td>
<td>Slightly likely</td>
<td>Quite likely</td>
<td>Extremely likely</td>
</tr>
</tbody>
</table>

1. I plan to drink responsibly or not at all in the next 30 days.

2. I plan to binge drink (i.e. consume 5 or more drinks in one sitting) in the next 30 days

3. In the next 30 days, I will avoid driving a car after consuming 5 or more drinks in one sitting.

4. Responsible drinking is:
   - Harmful
   - Beneficial

5. Responsible drinking is:
   - Pleasant
   - Unpleasant

6. Responsible drinking is:
   - Good
   - Bad

7. Responsible drinking is:
   - Worthless
   - Valuable

8. Responsible drinking is:
   - Enjoyable
   - Unenjoyable

9. Binge drinking is:
   - Harmful
   - Beneficial

10. Binge drinking is:
   - Pleasant
   - Unpleasant

11. Binge drinking is:
    - Good
    - Bad

46
12. Binge drinking is:
   [Box]
   [Box]
   [Box]
   [Box]
   [Box]
   [Box]
   Worthless
   Valuable

13. Binge drinking is:
   [Box]
   [Box]
   [Box]
   [Box]
   [Box]
   [Box]
   Enjoyable
   Unenjoyable

14. Monitoring your drinking is:
   [Box]
   [Box]
   [Box]
   [Box]
   [Box]
   [Box]
   Harmful
   Beneficial

15. Monitoring your drinking is:
   [Box]
   [Box]
   [Box]
   [Box]
   [Box]
   [Box]
   Pleasant
   Unpleasant

16. Monitoring your drinking is:
   [Box]
   [Box]
   [Box]
   [Box]
   [Box]
   [Box]
   Good
   Bad

17. Monitoring your drinking is:
   [Box]
   [Box]
   [Box]
   [Box]
   [Box]
   [Box]
   Worthless
   Valuable

18. Monitoring your drinking is:
   [Box]
   [Box]
   [Box]
   [Box]
   [Box]
   [Box]
   Enjoyable
   Unenjoyable

19. Drinking 5 or more drinks in one sitting is:
   [Box]
   [Box]
   [Box]
   [Box]
   [Box]
   [Box]
   Harmful
   Beneficial

20. Drinking 5 or more drinks in one sitting is:
   [Box]
   [Box]
   [Box]
   [Box]
   [Box]
   [Box]
   Pleasant
   Unpleasant

21. Drinking 5 or more drinks in one sitting is:
   [Box]
   [Box]
   [Box]
   [Box]
   [Box]
   [Box]
   Good
   Bad

22. Drinking 5 or more drinks in one sitting is:
   [Box]
   [Box]
   [Box]
   [Box]
   [Box]
   [Box]
   Worthless
   Valuable

23. Drinking 5 or more drinks in one sitting is:
   [Box]
   [Box]
   [Box]
   [Box]
   [Box]
   [Box]
   Enjoyable
   Unenjoyable

24. Family members important to me have suggested I cut down on my drinking.
   1= Definitely
   2= Somewhat
   3= Maybe
   4= Definitely
   False
   True
   5= Definitely
   6= Somewhat
   7= Definitely
25. Friends who are important to me encourage me to drink heavily.

1 = Definitely
True 2 3 4 5 6 7 = Definitely False

26. If family members who are important to me knew how much I really drink they would be disappointed in me.

1 = Definitely
True 2 3 4 5 6 7 = Definitely False

27. Most people important to me drink moderately or not at all.

1 = Definitely
True 2 3 4 5 6 7 = Definitely False

28. Most people important to me engage in drinking.

1 = Definitely
True 2 3 4 5 6 7 = Definitely False

29. I feel confident I can moderate my drinking in the next 30 days.

1 = Strongly
Agree 2 3 4 5 6 7 = Strongly Disagree

30. If I wanted to, I could avoid binge drinking in the next 30 days.

1 = Strongly
Agree 2 3 4 5 6 7 = Strongly Disagree

31. I can resist pressure to drinking from my friends in the next 30 days.

1 = Strongly
Agree 2 3 4 5 6 7 = Strongly Disagree

32. I can avoid situations where heavy drinking is likely to occur in the next 30 days.

1 = Strongly
Agree 2 3 4 5 6 7 = Strongly Disagree
Curriculum Vita

Denise Servo was born in El Paso, Texas. The first daughter of Marlon and Teresa Servo, she graduated from Franklin High School, El Paso, Texas in the spring of 2001 and entered the University of Texas at El Paso that fall. While pursuing a bachelor’s degree in health promotion, she interned at the Health Promotion and Education Department of the El Paso City County Health and Environmental District during the fall of 2006. There she gained valuable experience educating the public about sexual health and various other health topics. The following semester, in spring 2007, she entered the Graduate School at the University of Texas at El Paso. Meanwhile, she worked as a graduate research assistant with the BASICS (Brief Alcohol Screening and Intervention for College Students) Program on the UTEP campus for over a year. In addition, she presented her research entitled Attitudes and Perceived Behavioral Control as Mediators of Behavior Change Associated with a Brief Alcohol Intervention at the annual Society for Personality and Social Psychology conference in February 2008.

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