

ABSTRACT

Title of Dissertation: PEER INFLUENCE CONTEXTS OF ALCOHOL USE
AMONG FIRST-YEAR COLLEGE STUDENTS:
INVESTIGATING THE ROLES OF RACE, ETHNICITY,
AND GENDER THROUGH MULTIGROUP
MEASURED VARIABLE STRUCTURAL EQUATION
MODELING

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Professor Gregory R. Hancock
Measurement, Statistics, and Evaluation

The study purpose was to examine the contributions of peer context variables to the explanation of alcohol use of first-year college students by racial-ethnic group and by gender. Social norms theory and the theories of planned behavior, social identity/self-categorization, and status/status construction contributed constructs. Construct-related scores from sample survey responses demonstrated strong reliabilities ranging from .70 to .97.

The following constructs provided measures for the study: Normative perception, subjective norm, affective attitude, cognitive attitude, social identity/self-categorization,

status value, perceived behavioral control, intention and alcohol use. Normative perception and subjective norm were combined to create a single scale with stronger reliability than either had separately. Both cognitive and affective attitude were combined to create a single scale. Normative perception and attitude were measured the summer prior to college and in the fall; alcohol use was measured in the fall and in the spring. All other model variables were measured in the fall.

Survey data were collected online in three waves and were from a representative sample ($N=837$) at a large state research institution with a predominantly White (65%) undergraduate student body. Rates of self-reported past month alcohol use and heavy episodic drinking of participants were comparable to those of similar samples in national and in-state studies.

Applying multigroup measured variable structural equation modeling, the model explained between 60% of the variance in spring term alcohol use for Asian Pacific American students and 92% for African American/Black students. Data-model fit was acceptable ($NFI, CFI > .95, SRMR < .08$) for all groups in both analyses. Direct, indirect, and total effects of model variables were identified for each of five racial-ethnic groups in the study (African American/Black, Asian Pacific American, Latino/Latina American, White American, and Multiracial/Biracial American) and by gender for White men and White women. Tests of invariance demonstrated where specific paths in the model were significantly non-invariant (differed) and for which groups. Findings suggest the importance of pre-college intervention, the risk of increased alcohol misuse for first-year students, and the conditional effects of racial-ethnic group and gender.

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COLLEGE STUDENTS: INVESTIGATING THE ROLES OF RACE, ETHNICITY,
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STRUCTURAL EQUATION MODELING

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Completing a Ph.D. program and a dissertation is not something that happens in isolation, even though the much of the dissertation work is isolating in some ways. There are important people I would like to thank as I finish this work.

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LIST OF ABBREVIATIONS

AU2, AU3	Alcohol Use Time Two, Alcohol Use Time Three
IN	Intention
NP1, NP2	Normative Perception Time One, Normative Perception Time Two
PA1, PA2	Personal Attitude Time One, Personal Attitude Time Two
PBC	Perceived Behavioral Control
SISC	Social Identity/Self-Categorization
SV	Status Value
UNSC	University New Student Census

CHAPTER ONE

INTRODUCTION

Substance abuse, notably alcohol abuse, has received increasing attention as a national health crisis. In 2001 the U.S. Department of Justice reported that substance abuse, including alcohol abuse, was the nation's number one health problem (Ericson, 2001). National focus has expanded substantially in the last few years toward the problems of both college student drinking and underage drinking. In April 2002 the National Institute on Alcohol Abuse and Alcoholism (NIAAA) issued its report, *A Call to Action: Changing the Culture of Drinking at U.S. Colleges*. The report was a clarion-call for heightened focus on alcohol abuse among college students. In September 2003 the National Research Council (NRC) and the Institute of Medicine (IOM) jointly issued a report titled *Reducing Underage Drinking: A Collective Responsibility* which focused on the seriousness and pervasiveness of underage drinking and related harmful consequences, as well as outlining the national and community attention and federal, state, local, and private funding required to combat the problem. The NRC/IOM report called on colleges and universities to address underage drinking on their campuses and in their communities, just as did the 2002 NIAAA report which directly focused on college student drinking, whether underage or not. In July 2004 a bill was introduced into the House of Representatives "to provide support for programs and activities with respect to the prevention of underage drinking," (H.R. 4888, p. 1), based in part on the recommendations of the NRC/IOM 2003 report. There continues to be concern and momentum regarding alcohol abuse in this country, including underage drinking by college students.

Current Recommendations for Research

In its landmark 2002 report on college student drinking, the National Institute on Alcohol Abuse and Alcoholism (NIAAA) had a number of recommendations to researchers studying the issues. Two fundamental messages for this study were drawn from the recommendations, related to both content and methodology:

1. *Content Considerations: A Cultural Approach.* The NIAAA (2002) recommended focusing on “how to change the culture that underlies alcohol misuse and its consequences on campus, rather than simply on determining the number of negative alcohol-related incidents that occur each year” (p. 2).
2. *Methodological Considerations: A Longitudinal, Causal Modeling Approach.* NIAAA (2002) called for longitudinal studies using multivariate designs. Dowdall and Wechsler (2002) in their NIAAA-invited paper advocated use of “causal models such as path analysis and structural equation modeling” (p. 20).

The NIAAA content and methodology recommendations are consistent with those of senior higher education scholars Ernest Pascarella and Patrick Terenzini (1991) who suggested that studies of college students and college impact should be theoretically based, longitudinal, consider direct and indirect effects, incorporate sociological perspectives, and examine conditional effects for student subgroups.

Senior higher education researcher Alexander Astin (1993) additionally has advocated an input-environment-output (IEO) model. He argued that we must know something about student characteristics prior to them experiencing a campus environment in order to understand the outcomes for those students. He recommended hierarchical linear modeling (HLM) to examine the impact of a college environment on students

(Astin, 1993). However, as Pascarella and Terenzini (1991) pointed out, HLM can disguise the conditional effects of an environment for various subgroups. It is for this reason that measured variable structural equation modeling (SEM) using group analyses was employed for this study. SEM allows for examination of longitudinal panel data, including pre-college characteristics, environmental influence variables, and outcome variables as recommended by Astin, while still allowing for examination of subgroup effects as highlighted by Pascarella and Terenzini.

This investigation has thus addressed the content and methodological demands of current recommendations. The longitudinal study posited a theoretically derived measured variable structural equation model and examined it using a common sample across three waves of online survey data collection in order to aid in understanding alcohol use among college students through a focus on the peer influence processes context of drinking among entering first-year students and by examining the model for relevant subpopulations (e.g., by race, ethnicity, and where possible given the sample size, by gender).

Background of the Study

The NIAAA (2002) report stated that for colleges and their students, the “environmental and peer influences combine to create a culture of drinking” (p. 1). The report summarized, “Customs handed down through generations of college drinkers reinforce students’ expectation that alcohol is a necessary ingredient for social success. These beliefs and the expectations they engender exert a powerful influence over students’ behavior toward alcohol” (p. 1).

Further, the report highlighted that belonging to specific subgroups (e.g., men, White students) have been correlated with higher-risk drinking practices (NIAAA, 2002). It also identified first-year college students as a group at risk for misuse of alcohol and for experiencing related harmful consequences (NIAAA). Indeed, first-year students have been found socially vulnerable regarding risk for exacerbation or “uptake” of high-risk drinking (Weitzman, Nelson, & Wechsler, 2003, p. 29). The NIAAA report indicated that the answer to addressing alcohol misuse among college students and its related consequences is to change the culture of drinking [among students], and that the question for researchers and administrators is “how?” (p. 2).

In order to discover ways to change the culture of alcohol use among students, one must first understand the elements of that culture. The peer context is an important part of the campus and student culture (Astin, 1996; Pascarella & Terenzini, 1991) and is relevant to reducing misuse of alcohol among college students (Johnston & White, 2003; Perkins, 2003; Perkins, 1997; Perkins & Berkowitz, 1986; Trockel, Williams, & Reis, 2003). Peer influence has been associated with drinking behavior among college students and other youth (e.g., Johnston & White; Perkins & Berkowitz; Trockel et al.). Additionally, Astin (1996) has argued, “the strongest single source of influence on [a college student’s] cognitive and affective development is the student’s *peer group*” (italics in original; p. 126).

Astin (1993) further argued that part of the college environment for a student is that which the student creates for him or herself through individual choices and through associations he or she develops. Thus, the friends a student chooses, the groups he or she joins, the way a student views the environment, and the places he or she socializes, are all

part of that self-produced environment to which Astin refers. Each of these elements has contributed to a student's current choices and hold implications for the student's future experiences.

Currently, however, the elements important in the peer influence culture of alcohol use among students, structural relationships among those elements, and how those relationships and their importance may vary across subpopulations of students are far from understood. A critical step, then, in beginning to answer *how* to change the culture of alcohol use among students, is to develop a clearer understanding of that context and the people, structures and processes within it.

Extent and Consequences of Alcohol Use Among Students:

What We Know and What We Don't

Alcohol use and abuse among college students is a substantial problem on university campuses today (NIAAA, 2002). Particularly through research over the last decade or so, much has been learned regarding the patterns of college student drinking, including who has highest-risk drinking patterns, where high-risk drinking occurs most frequently, and what some of the consequences of that drinking are (e.g., NIAAA, 2002; Presley, Meilman, & Lyster, 1994; Wechsler, Davenport, Dowdall, Moeykens, & Castillo, 1994).

Research has also demonstrated that there are varying trajectories of alcohol use among college students, with some students consuming at high-risk levels initially and then consumption levels tapering over time in college, for instance, or others consuming alcohol on a trajectory that is increasing in risk of use over time (Schulenberg & Maggs, 2002). Misuse of alcohol by first-year students has been cited as a special concern in part

because of the transitions this group experiences and the often underage status of first-year students, thus making this population more vulnerable to high-risk drinking (Weitzman, Nelson, & Wechsler, 2003).

Less understood than the incidence of drinking among students are the contextual dynamics and important elements in that context, including social-psychological patterns that make one group or another more or less at risk for high-risk drinking and related consequences (Schulenberg & Maggs, 2002). As Schulenberg and Maggs have stated, “multiwave, contextually sensitive longitudinal research is essential for gaining a fuller understanding of substance use etiology.... [They further state that] short-term, intensive repeated-measures data are valuable for examining processes linking proximal influences such as the transition into college, concurrent risk factors, and substance use” (p. 64). This study was designed to “sharpen the lens and widen the focus” (Dowdall & Wechsler, 2002, p. 14) in order to understand better the social-psychological peer influence contexts of alcohol use among first-year students, including within subpopulations by race, ethnicity, and gender.

The Extent of Alcohol Use Among College Students

National surveys conducted over the last several decades have demonstrated that most (nearly 80%) of teens have tried alcohol by the 12th grade (IOM/NRC, 2003). Although there was a decline in underage drinking during the 1980s, it has since stabilized at high rates, according to a recent NIAAA press release regarding a study by Faden and Fay (2004). The researchers used jointpoint statistical methodology to analyze data from 3 national surveys, Monitoring the Future, Youth Risk Behavior Survey, and the National Household Survey on Drug Abuse. Analyses demonstrated approximately

20% of 8th graders and 49% of 12th graders acknowledged consuming alcohol in the past 30 days.

Given these national statistics as well as the general trend that college students report drinking more than their non-college peers (National Research Council & Institute of Medicine [NRC & IOM], 2003), it is easy to recognize the likely patterns of previous alcohol use and abuse among entering students. A recent press release from Join Together cited a study by Paul Gruenewald of Prevention Research Center/Pacific Institute for Research and Evaluation was principal investigator focused on measuring patterns of quantity and frequency of alcohol consumption. The study of 1000 college men found that some students drink more than 20 alcoholic beverages in a row, a toxic or lethal amount of alcohol. It also found that most of those students had had 24 drinks in a row at some point in time, and that at least 10% of the time they had 12 or more in a row.

In their landmark publication on strategies to reduce underage drinking, the NRC & IOM (2003) reported “among 18-22 year olds, 41.4% of full time college students ...report heavy drinking” (p. 14). The document also highlighted work by Johnston, O’Malley, and Bachman (2003) with Monitoring the Future, noting that by the time teens are high school seniors, 72% of them report having been drunk in the past year, nearly half are current drinkers, and 29% report having 5 or more drinks in a row in the past two weeks.

Consequences of Alcohol Use Among College Students

Use and abuse of alcohol can lead to related problems and harm for the person drinking as well as for the persons around him or her. Consequences range from less harmful (i.e., missing a test) to more harmful (i.e., sexual assault) and even deadly, from

short term ones such as injury to long term ones such as alcoholism, dysfunction, and disabling injury (NRC & IOM, 2003). Abusive drinking among college students has been found to cause health-related and academic problems for students as well as problems for their campuses and the neighboring communities (NIAAA, 2002). Homicide, suicide, unintentional injury and drinking and driving are all serious consequences of alcohol use among college students (NRC & IOM). Unwanted or unplanned sexual activity and high-risk sexual activity are also common consequences for this age group (NIAAA, 2002; NRC & IOM, 2003). Negative effects on brain development and structure have also been recently reported as consequences for adolescents (NRC & IOM; Tapert, Caldwell, & Burke, 2004/2005).

Alcohol Use Among Subpopulations of College Students:

Who We Know and Who We Don't

Substantial investigation has documented differences among various populations in the extent of alcohol consumption. However, less research has been done regarding conditional effects of subgroup on determinants and consequences of that use. Alcohol use increases significantly during the first year of college, with the first 6 weeks being reported as “the most dangerous due to the increase in stress levels associated with a new environment and the pressure to be accepted by a peer group” (NRC & IOM, 2003, p. 48).

In terms of gender, college men have typically been found to drink at higher rates than women, but that is shifting somewhat, with women drinking at rates closer to those of men (NRC & IOM, 2003; Wechsler, Lee, Kuo, Seibring, Nelson, & Lee, 2002).

Women's reasons for drinking may be different than those for men (Korcuska & Thombs, 2003).

Racial and ethnic differences exist in prevalence of drinking rates as well. White students ages 12-20 report higher rates of heavy drinking (21.4%) than non-White students, with Hispanic/Latino/Latina students reporting 17.2%, African American/Black 10.3%, and Asian Pacific American nearly 8% (SAMHSA, 2002 in NRC & IOM, 2003). More recently, for instance, researchers have found that Hispanic and Latino/Latina students, a growing part of the population on campuses and beyond, are exposed to more media images of drinking than are other youth (Higher Education Center, personal communication, May 2003).

There are some groups known to be at risk for high levels of alcohol use and abuse, including first-year students, men, and White students among them (NIAAA, 2002). Fewer studies have included analyses of women and students from specifically examined diverse racial/ethnic backgrounds. Multigroup analyses by subgroups (e.g., race/ethnicity and gender) can provide greater understanding of contributions of variables to behavioral outcome.

Contexts of Alcohol Use Among Students

What we have learned about student drinking is that most of it happens in a social context (NIAAA, 2002), one that is centered on environments where peers are frequently perceived, correctly or incorrectly, to drink greater quantities of alcohol than oneself (Perkins & Berkowitz, 1986; Haines & Spear, 1996). Among 15-20 year olds, drinking in unsupervised settings such as parties, cars, and outdoors increases with age, as does drinking in bars and restaurants, suggesting common venues for drinking among college

students (NRC & IOM, 2003). Crowds and groups have additionally been associated with alcohol consumption; college campuses have such contexts in which drinking can occur, often times abusive or high risk drinking. It is these contexts, these cultures of alcohol use on college campuses and among college peers, that NIAAA (2002) has suggested are pivotal in trying to reduce high-risk alcohol use by students.

Investigating NIAAA's Recommended Campus Culture View

Although there are more complex views of culture, particularly those offered by anthropologists, a social-psychological view of culture has been defined by House (1981 in Miller-Loessi, 1995) and is more suited to this study. Further, House distinguishes culture from social structure, an important distinction to make, and characterizes them both as part of a social system. Miller-Loessi quotes House (1981, p. 542):

A social system, or what Inkeles and Levinson (1969) term a sociocultural system, is a set of persons and social positions or roles that possess both a culture and a social structure. A culture is a set of cognitive and evaluative beliefs—beliefs about what is or ought to be—that are shared by the members of a social system and transmitted to new members. A social structure is a persisting bounded pattern of social relationships (or pattern of behavioral interaction) among the units (that is, the persons or positions) in a social system.” (Miller-Loessi, p. 399)

In trying to develop a clearer understanding of “the culture that underlies alcohol misuse and its consequences on campus” (NIAAA, 2002, p. 2), it is important to examine the context of that culture. In this instance, culture may be cognitive and evaluative beliefs about alcohol use and its consequences, beliefs that, according to Fishbein and

Ajzen (1975), are antecedent to norms, attitudes, intentions, and behaviors. The persistent patterns of relationships among people or groups of people that exist within a social system as defined previously by House (1981 in Miller-Loessi), or sociocultural system, would then be interpreted as structural elements of that system. Both cultural elements (e.g., beliefs antecedent to norms) and structural elements (e.g., bounded patterns of social relationships or behavioral interaction), then, may be important in understanding the use of alcohol among college students.

Peer Influence Among College Students

Context and culture are created in part by peers, particularly for college students (Astin, 1996; Newcomb & Wilson, 1966). The idea that college peers have an influence on individual students has been strongly supported. “A student’s most important teacher is another student” (Chickering, 1969, p. 253). This quote is often used today, over thirty-five years after it was stated, as researchers learn more about college students. In recent years, this perspective has been confirmed over and over again; peers do, indeed, have a tremendous role in creating one another’s environmental experiences on the college campus (Astin, 1996; Pascarella & Terenzini, 1991, 2005). As noted previously, Astin (1996) has found that a student’s peer group represents the greatest singular influence on his or her development in the college environment. He stated, “In particular, the characteristics of the peer group and the extent of the student’s interaction with that peer group have enormous potential for influencing virtually all aspects of the student’s educational and personal development” (Astin, 1996, p. 126). Similarly, in their review of 25 years of research regarding college students and its follow-up volume, Pascarella and Terenzini (1991, 2005) also found the influence of peers to be particularly strong.

In sum, peer influence has been found to contribute to college outcomes (Astin, 1977, 1993, 1996; Pascarella & Terenzini, 1991, 2005). However, most works on college outcomes “focus on description of outcomes and do not deal explicitly with the development of comprehensive theoretical explanations for their occurrence or the building of comprehensive theoretical frameworks” (Weidman, 1989, p. 289). Additionally, much work regarding college students has been psychological in nature, with little regard for the social structure of the campus environment and its influence on the individual (Feldman, 1972; Pascarella & Terenzini, 1991; Weidman, 1989). This study proposes a theoretically integrated model that intersects the individual student and the campus social environment.

“Peer Context” and Alcohol Use Among College Students:

What We Know and What We Don’t

A predominantly psychological view is represented also in the research on understanding peer influence for college students and other youth regarding alcohol use. For instance, some studies have examined strength of resistance to peer pressure instead of what that peer pressure is comprised of and what resistance may look like in a contextual way. This study has taken a social-psychological view, including both psychological and sociological social-psychology perspectives, and has tried to demonstrate instead what a context of peer pressure or personal resistance to that pressure looks like and for whom.

Perkins and Berkowitz (1986) have viewed peers outside the strictly psychological frame that has often been studied. Their view is one intersecting sociological and psychological aspects of a student’s experience. Their cultural approach,

the “social norms approach” (Perkins, 2003), is an important—if controversial—one that has gained popularity over the last decade or two. It grew out of their foundational study (Perkins & Berkowitz) and from a subsequent study by Haines and Spear (1996) who applied the Perkins and Berkowitz findings to an intervention used on another campus. This social norms approach, explained later in more detail, essentially tries to correct misperceptions students have regarding their peers’ attitudes and behaviors (i.e., their inflated normative perception of those attitudes and behaviors) surrounding alcohol, contending that when students hold corrected perceptions, their behavior and attitudes will also shift toward those perceptions, generally more conservative (i.e., less risky, less permissive) than the misperceptions. Related social norms media campaigns have been found, in some instances, to correct student misperceptions that their peers are more liberal (i.e., more risky, more liberal) in their attitudes, and thus in their alcohol-related behaviors, than are they (e.g., Haines & Spear). Although highly controversial in terms of results (Carter & Kahnweiler, 2000; Clapp, Lange, Russell, Shillington, & Voas, 2003; Keeling, 1999, 2000), for some campuses these campaigns have been found to support changes toward lower risk drinking behaviors among students (Haines & Spear; Perkins, Haines, & Rice, 2005).

The research that has developed from this focus on social norms has looked largely at the variables of alcohol-related actual personal behavior, personal attitude, and normative perception of peers’ attitudes and behavior. Social norms theory (SNT) (Perkins & Berkowitz, 1986; Perkins, 2003; Perkins, 1997) essentially states that when students misperceive the campus norm of drinking behavior as higher-risk than their own, they may adjust their own quantity and frequency of drinking upward, toward that higher-

risk misperceived normative drinking level. By contrast, SNT also argues that by correcting students' misperceived views of others' alcohol-related attitudes or behavior so that their perceptions are more in line with the reality of a lower-risk drinking behavioral norm, then students will adjust their behavior toward that lower-risk actual quantity and frequency of drinking rather than toward the higher-risk misperceived norms.

Thus, according to social norms theory (Perkins & Berkowitz, 1986; Perkins, 2003; Perkins, 1997), social norms campaigns through campus media have been developed as a way to alter the "peer context" (Perkins & Berkowitz, p. 962) of alcohol use. Social norms campaigns are believed to influence students to drink less because the misperceptions students have of a typically more liberal norm of drinking levels are corrected (Haines & Spear, 1996; Perkins et al., 2005). This normative perception is thought to contribute to one's behavior indirectly through personal attitude (Perkins & Berkowitz). This social norms model continues to be debated in the literature, with some researchers contending that well developed social norms interventions do reduce high-risk drinking (e.g., Haines & Spear, 1996; Perkins, 2003; Perkins et al.), and other researchers arguing that social norms interventions may not work (Campo, Brossard, Frazer, Marchell, Lewis, & Talbot, 2003; Clapp et al., 2003; Wechsler, Nelson, Lee, Seibring, Lewis, & Keeling, 2003) or not for everyone, not for all subgroups on campus (e.g., Carter & Kahnweiler, 2000; Keeling, 1999, 2000), and that they may contribute to increases in use of alcohol for some students (Wechsler et al., 2003).

Summary: What Are The Gaps In What We Know? A Case for Extending Investigation of the “Peer Context” of Alcohol Use Among College Students

Research on college drinking over the last ten to twenty years has elevated and brought into focus the importance of peer influence as an aspect of student drinking behavior, particularly through in the introduction of social norms theory (SNT) (Perkins & Berkowitz, 1986) and with the focus on campus cultures (e.g. NIAAA, 2002). The investigation of the “peer context” (Perkins & Berkowitz, p. 962) regarding alcohol consumption among college students continues to be important but needs to be elaborated and extended. Given findings about the strong general influence of peers on students (Astin, 1996; Chickering, 1969; Pascarella & Terenzini, 1991, 2005), as well as in the context of alcohol use (Johnston & White, 2003; Perkins & Berkowitz, 1986; Trockel et al., 2003), and the limits of our current understanding of how the peer context influences student alcohol use and misuse (NIAAA, 2002), further exploration of the peer context and its intersection with the student is *imperative* for better explaining the contributors to student alcohol use and for more successful intervention development.

While greater understanding of the peer context and its relationship to the individual is pivotal, there continues to be a gap in the understanding and definition of the peer context, the relationship of the self to the context, and the role of the subpopulation in determining that context, as well as in the associations among those elements. This study was designed in part to extend this social norms research program initiated by Perkins and Berkowitz (1986). It has elaborated on the elements of “peer context” (Perkins & Berkowitz, 1986, p. 962), introducing self-peer constructs hypothesized as part of the social-psychological environmental processes context of alcohol use among

first-year students, thus adding to the understanding of the campus culture surrounding student alcohol use, as called for by NIAAA (2002).

Toward Understanding the Culture of Alcohol Use Among Students:

Extending the Peer Context View

With the belief that the study of actual norms of alcohol use, perceptions of those alcohol use norms, and the influence of attitudes, norms, and perceptions on behavior is, indeed, an important part of the peer context of alcohol use on college campuses, *but only a part*, this study focused on extending the view of the peer context to include additional theoretically derived variables hypothesized to be in the peer influence processes context of drinking among first-year college students. Several theories in addition to social norms theory offer ways to conceptualize this context. The theory of reasoned action (Ajzen & Fishbein, 1973; Fishbein & Ajzen, 1975; Fishbein, 1967) and its extension, the theory of planned behavior (Ajzen, 1985, 1991); social identity theory (Turner, 1982) and its extension self-categorization theory (Turner, 1985); and status characteristics theory (Berger, Zelditch, & Cohen, 1966), and its extension status construction theory (Ridgeway, 1991; Ridgeway & Balkwell, 1997) were all integrated into this investigation.

Each of the theories identified will be explained in greater detail in Chapter Two, as will each of the constructs identified here, but for now an introduction of the theories and the constructs drawn from each is offered as a means of familiarizing the reader with them. From social norms theory (SNT), the constructs of personal attitude (cognitive), normative perception, and behavior were investigated. The theory of reasoned action (TRA) and the theory of planned behavior (TPB), incorporating the theory of reasoned

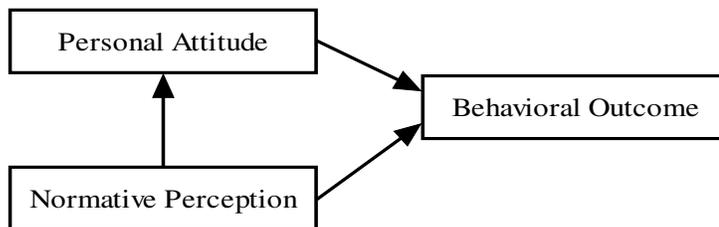
action, offered personal attitude (affective), subjective norm, intention and behavior. The theory of planned behavior additionally provided the model with the construct of perceived behavioral control as a means of examining how the individual interpreted control over his or her choices about alcohol. Structurally related constructs were included to give form to the processes brought to the study by social norms theory, the theory of reasoned action and the theory of planned behavior. To help distinguish personal interpretation of individual social identity within the peer context, the structurally related element of self-categorization was incorporated using the theories of social identity/self-categorization. These elements were represented through the construct of social identity/self-categorization. Status characteristics theory and status construction theory were integrated into the study as a way to highlight social pressure and status desires with a focus on the structurally related element of personal status value (i.e., desire for social prestige on campus).

Social Norms Theory

Social norms theory asserts that normative perception has an indirect influence on behavior through one's personal attitude (Perkins & Berkowitz, 1986). It posits that the greater the degree of one's misperception of the actual norm, the more likely one is to consume alcohol in the direction of one's misperception (generally higher risk consumption of alcohol). Further, it asserts that if one's normative perception can be brought more in line with the actual behavioral or attitudinal norm, then one's own behavior should also become more consistent with that actual norm. Research findings have demonstrated that students misperceive others as having a more high-risk behavioral or attitudinal norm around alcohol than they actually do (Perkins & Berkowitz, 1986;

Perkins, Haines, & Rice, 2005). This misperception, according to social norms theory, pushes student drinking up toward that higher risk misperceived norm. Also according to social norms theory, by refocusing the misperceived norm to be more in line with the actual norm, an individual's own drinking patterns will follow toward that corrected lower risk amount. Figure 1.1 illustrates the underlying assumptions of social norms theory.

Figure 1.1. Underlying Assumptions of Social Norms Theory



Note. Adapted from Perkins, 2003, p. 11

Does normative perception influence behavior either directly or indirectly or both over time? Does behavior influence normative perception over time? As will be further identified in Chapter Two, there is currently no clear answer in the literature regarding these questions (e.g., Carter & Kahnweiler, 2000, Keeling, 1999, 2000; Wechsler, Nelson et al., 2003) with or without intervention studies, though the theory assumes both answers are yes.

The Theories of Reasoned Action and Planned Behavior

Research from the theory of reasoned action (TRA) (Fishbein & Ajzen, 1975) and the elaborated version of it, the theory of planned behavior (TPB) (Ajzen, 1985, 1991) were also used to derive the measured variable structural equation model represented in this study. Essentially, the theory of reasoned action posits that behavioral outcomes are

directly influenced by intention, and that intention is directly influenced by both personal attitude and by subjective norm. The theory of planned behavior extends the theory of reasoned action by positing that both intention and behavioral outcomes are also directly influenced by one's perceived behavioral control, a variable suggesting the degree to which the behavior is considered under one's own control or "volition" (Ajzen, 1985, p. 24). The two theories have themselves been much debated in the literature individually and collectively, though differently than social norms theory, as will be discussed in Chapter Two.

Both the theory of reasoned action and the theory of planned behavior were included in this study design for two primary reasons, elaborated in Chapter Two. These two interrelated theories have been applied successfully to health-related behavior (e.g., Godin & Kok, 1996; Johnston & White, 2003; Terry & Hogg, 1996). Developed before social norms theory, the theory of reasoned action has similarities to SNT. Represented *within* the theories are the construct of personal attitude and a version of normative perception, subjective norm. The relationship between social norms theory and the theories of reasoned action/planned behavior is an important one addressed in only a single study at the time of this writing (i.e., Trockel et al., 2003). Additionally, social norms theory and the extension of TRA, the theory of planned behavior, were developed simultaneously and each hold potential to explain alcohol use among students, they appear until now not to have been *discussed* simultaneously except in the Trockel et al. study examining the normative components of each theory.

More specifically, although TRA/TPB do not define the type of association between attitude and subjective norm, except to acknowledge that there is one, there has

been debate in the literature about whether there may be a crossover or causal relationship (Oliver & Bearden, 1985) between the two variables. SNT, then, in some way elaborates TRA/TPB by positing that normative perception has a direct causal influence on attitude, as well as direct and indirect influence on behavior. Unlike TRA/TPB, however, SNT does not include the variable of intention, which is posited to be the most proximal measure available to predict behavioral outcomes (Ajzen, 1985, 1991; Fishbein & Ajzen, 1975) and unlike TPB, SNT does not include the variable of perceived behavioral control, identified as the degree of perceived “volitional control” (Ajzen, 1985, p. 24) regarding a behavior, in other words, one’s perceived ability to choose a behavior or not to choose it. By including the variables of intention and perceived behavioral control, it was anticipated that the relationship of the individual student to the peer influence processes context could be understood and represented more clearly.

Social Identity Theory and Self-Categorization Theory

This study applied social identity theory (Turner, 1982) and self-categorization theory (Turner, 1985), developed through a research foundation built by European social psychologists Henri Tajfel and John C. Turner and colleagues (e.g., Tajfel, 1979, 1982; Tajfel, Billing, Bundy, & Flament, 1971; Tajfel & Turner, 1979, 1986; Turner, 1982, 1985; Turner & Oakes, 1989; Turner, Hogg, Oakes, Reicher, & Wetherell, 1987) and examined also by other researchers (e.g., Johnston & White, 2003; Terry & Hogg, 1996; Terry & Hogg, 2000). Their work brings to the forefront the reference group, and how its influence becomes active in individual behavior (Turner, 1985), thus offering a way to extend the work done by Perkins and Berkowitz (1986) and others to follow them.

Social Norms Theory & Social Identity/Self-Categorization Theory

No studies to date have examined concepts from social norms theory and social identity/self-categorization theories together. However, it was hypothesized in this study that measures of social identity/self-categorization could help to develop further the concept of reference group represented in normative perception by SNT and in subjective norms by TRA/TPB.

Status Characteristics Theory and Status Construction Theory

According to Ridgeway and Walker (1995) the concept of status has two meanings in sociology, one referring a “position in a social system” (p. 281) and the other related to “value or worth in a community” (p. 281). Today these are interpreted as status structures and status value (Ridgeway & Walker). People hold status value beliefs; those individuals who are deemed to have high status based on status value beliefs also hold the potential for influence others in that social system (Ridgeway & Walker). It is this opportunity to influence others that makes the idea of status a potent one.

College Students, Alcohol, and Status in the Literature

The idea of status is hinted at in the literature on alcohol and college students. For example, although not identified as relevant to study by Perkins and Berkowitz (1986) or Perkins (1997), Newcomb and Wilson (1966) hinted earlier at a connection between alcohol use and social status, as did alcohol and other drug researcher and psychologist William Hansen (1997). As examined also in Newcomb and Wilson (1966), Perkins and Berkowitz (1986) instead cited that work and applied attribution theory to their development of social norms theory (Perkins, 1997).

As noted earlier, in its 2002 report *A Call to Action: Changing the Culture of Drinking at U.S. Colleges*, the NIAAA identified “students’ expectation that alcohol is a necessary ingredient for social success” (p. 1), or as established experimentally by Ridgeway (1991) and colleagues (Ridgeway & Balkwell, 1997) in developing status construction theory (Ridgeway, 1991; Ridgeway & Balkwell, 1997), one can use social “prestige” (Ridgeway, 2000) as a way to measure status. Additionally, a recent study by this investigator and senior higher education scholar William Sedlacek (Snyder & Sedlacek, 2003) found evidence suggesting that a status mechanism was operating in the way status construction theory would predict within the peer context of alcohol use. In a study on the same campus as the one for the current study but among an earlier cohort of entering first-year students Snyder and Sedlacek found that status constituted something different than either attitude or normative perception but correlated with them, and concluded that status beliefs and values should be examined further in the context of alcohol use among students. Measures of one’s peer alcohol status beliefs coupled with measures of one’s own (personal) value of status (i.e., social prestige on campus) can give indications of preference for a group other than one’s own reference group, or in-group, thus a potential openness to influence from that other group (i.e., out-group).

Comparing Social Norms Theory and Status Construction Theory

Next status construction theory (SCT) and social norms theory (SNT) (Berkowitz & Perkins, 1986; Perkins & Berkowitz, 1986) are compared and contrasted on points pivotal to this study, including a discussion of how what “most people” (Perkins, 1997, p. 184; Ridgeway, Boyle, Kuipers, & Robinson, 1998, p. 332) believe relates to both theories and how the theories diverge regarding in-group and out-group favoritism. The

following segment on the comparison of social norms theory and status construction theory draws heavily on two original papers by this investigator (Snyder, 2001; Snyder & Sedlacek, 2003).

Social norms theory grounded in reference groups (a.k.a. 'In-groups'). Perkins and Berkowitz (1986) and Perkins (1997) used the idea of reference groups to ground their work, drawing on the cornerstone work by sociologists Theodore Newcomb and Everett Wilson (1966), *College Peer Groups*, to support it. Perkins and Berkowitz and others (e.g., Carter & Kahnweiler, 2000) have found that the more proximal a peer group (e.g. close friends versus all students), the less misperception regarding alcohol-related attitudes and behaviors.

'Out-groups', a sociological interpretation. The idea of a reference group (also called an "in-group" [Ridgeway, 1991; Turner, 1985]) is one aspect of the peer context. Another aspect is the "out-group" (Ridgeway & Balkwell, 1997), or anyone not in the in-group of a given person or group. When a status mechanism is in operation, both low *and* high status persons tend to favor the high status group, or think it more prestigious, even if it is the "out-group", or not one's own reference group (Ridgeway & Balkwell, 1997). This differs from reference groups when a status mechanism is absent, a circumstance in which one generally favors one's own group, thinking it is the best or most preferred in some way (Ridgeway).

Status construction theory and normative perception: Key similarities and differences. In many ways Perkins' (1997) ideas are consistent with what sociologists Ridgeway et al. (1998) asserted about status construction theory: beliefs are taught to others; emerge from local encounters; organize social relations; and are fundamentally

consensual, in other words they are “beliefs about what ‘most people’ think” (Ridgeway et al., p. 332). Using “attribution theory and peer socialization theory [Newcomb, 1966]” (Perkins, 1997, p. 178), Perkins focused on actual and perceived norms (including misperceptions), both what individuals believe or do and what they believe or misbelieve “most students” (p. 184) believe or do regarding alcohol consumption. Although Perkins (1997) does cite Newcomb (1966), he does not address status, although Newcomb and colleagues discuss it (Newcomb & Wilson, 1966). [See below.] Instead, Perkins uses “the formation and acquisition of reference group norms” (1997, p. 178) as his base.

There is an additional concept important to the idea of status which authors Ridgeway et al. (1998) highlight, and which distinguishes Perkins and Berkowitz (1986) and Perkins’ (1997) view of reference group norms from their use of the status concept. Ridgeway et al. bring to the forefront an important distinction between status as a concept that includes a consensual view among “‘most people’” (p. 332) regarding social worth versus a “‘mere difference’” (p. 331) that is characteristic of in-group (i.e., group to which one belongs) preference as the favored group. Essentially Ridgeway et al. say having status implies that low *and* high status individuals or groups recognize the high status group or individuals as the favored ones. In-group favoritism, characterized by “‘mere differences’” and representative of the reference group norms perspective (e.g., Perkins, 1997; Perkins & Berkowitz, 1986) instead means that no matter what group is one’s own, the tendency is to favor that group, the one to which one belongs, rather than another group, that another group is not consensually viewed as better in some way. This is the pivotal point regarding the differences between social norms theory and status construction theory as applied to peer contexts of alcohol use on campus.

Summary. In sum, this discussion first outlined work, initiated by Perkins and Berkowitz (1986), on perceptions of social norms—a view of what “most people” (Perkins, 1997, p. 184) think or do, whether or not the perceptions are accurate—and the link to student alcohol use and abuse. With this background, the foundation for the investigation is built by linking Perkins’ (1997) work which suggests how such normative misperceptions may be spread in a campus culture to the work on status (Berger et al., 1966) and status construction theory (Ridgeway, 1991, 2000; Ridgeway & Balkwell, 1997), which demonstrates how nominal characteristics such as gender or race (or, as hypothesized here, perhaps alcohol consumption by students) take on status value within a population.

Identifying the commonalities between these two perspectives leads one to wonder if one or perhaps even *both* mechanisms may operate in a college campus context. In other words, is it possible that normative misperceptions of what “most people” (Perkins, 1997, p. 184) do or think, *and* consensual acceptance (Ridgeway et al., 1998, p. 332) of what “most people” (Ridgeway et al., 1998, p. 332) think constitutes status on campus are simultaneously at work? This possibility is consistent with the view of Harrington and Fine (2000) that multiple social-psychological processes occur at the same time within small groups. The present study allowed for examination of both elements and their possible influences in the cultural context of campus and among specific subgroups of students.

Linking status and social identity/self-categorization through the literature

As noted above, recent studies have suggested that multiple social-psychological mechanisms may operate simultaneously (Harrington & Fine, 2000). It is possible that

the mechanisms of status and social identity/self-categorization may operate simultaneously (Kalkhoff, & Barnum, 2000; Oldmeadow, Platow, Foddy, & Anderson, 2003). Oldmeadow et al. argued that these two mechanisms affect social influence through different processes: “status via perceptions of competence, and social identity through perceptions of similarity” (Hogg & Ridgeway, 2003, p. 98). Structural equation modeling can provide indication of relationships between status related and social identity/self-categorization variables.

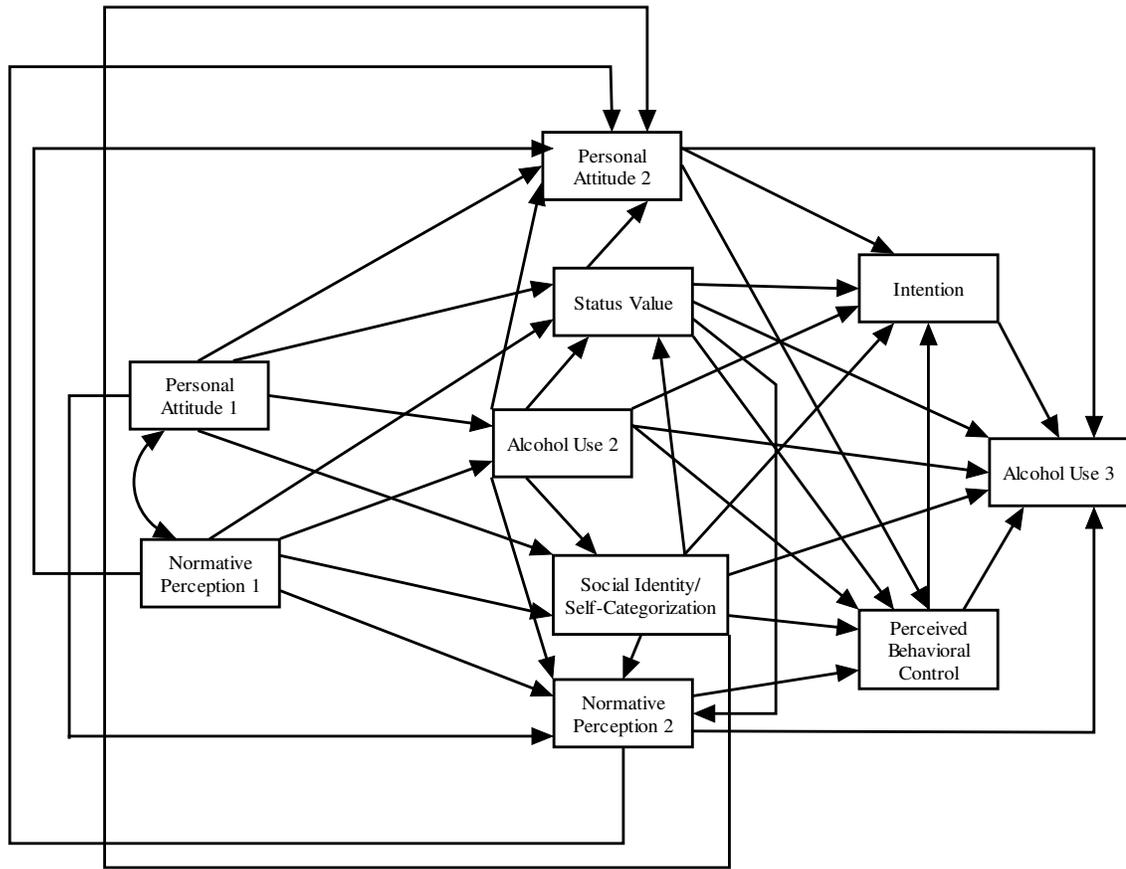
Literature Summary

In this study a model integrating key theoretical perspectives related to the peer context of alcohol use among first-year college students was posited and tested using measured variable structural equation modeling. The model was investigated by specific subgroup (e.g., race, ethnicity, and gender). It examined constructs from social norms theory (SNT) (Perkins & Berkowitz, 1986), personal attitude (PA), normative perception (NP) and behavior. It added the elements from the two-theory family, theory of reasoned action (TRA) (Fishbein & Ajzen, 1975) and the theory of planned behavior (TPB) (Ajzen, 1985, 1991), used frequently in studying health behaviors (Godin & Kok, 1996) and occasionally in examining alcohol use by college students (e.g., Johnston & White, 2003). These two theories posited relationships among five elements: subjective norm (SN), personal attitude (PA), perceived behavioral control (PBC), intention (IN), and behavior. The three theories each brought with them previously hypothesized relations among the constructs and were focused predominantly on how a process works and what elements contribute to it. Subjective norm and normative perception were combined to make a single normative perception variable, and the same was done with the cognitive

social norms theory version of personal attitude and the affective version of personal attitude from the theory of reasoned action/planned behavior.

Finally, the model incorporated elements and relationships hypothesized from the initial three process-focused theories previously discussed and linked them with two key theoretical areas of study, social identity theory/self-categorization theory (SC) (Turner, 1982, 1085) and status characteristics theory (Berger et al., 1966) and status construction theory (SCT) (Ridgeway, 1991; Ridgeway & Balkwell, 1997), both focused more on structural relations between self and peers. The model was developed to help clarify processes and structures within a campus cultural context for first-year students as a whole and for specific subgroups, to elaborate understanding of the personal characteristics, views, and experiences of students over time, and to assist in predicting alcohol use behavior in the first year of college. Figure 1.2 presents the peer context model of alcohol use among college students.

Figure 1.2. Peer Context Model of Alcohol Use Among College Students.



Methodological Considerations:

Longitudinal, Causal Models Examining the Individual in Context

In designing this study, consideration was given to current thinking regarding methodological issues in studying college students and alcohol, and college students more generally. Synthesis of these issues came largely from two sources, the NIAAA Task Force (2002) and related work (e.g., Dowdall & Wechsler, 2002; Schulenberg & Maggs, 2002) and from senior higher education researchers Ernest Pascarella and Patrick Terenzini (1991) and Alexander Astin (1993, 1996). The NIAAA Task Force has called for longitudinal studies using multivariate designs. More specifically, Dowdall and

Wechsler (2002) in their NIAAA-invited paper examining the issue of college drinking called for studies that address “the influence of the college and its alcohol environment” (p. 14), including use of “causal models such as path analysis and structural equation modeling” (p. 20). These recommendations are consistent with those of Pascarella and Terenzini (1991) in their review of 25 years of research on college students. They suggested that studies of college students and college impact should be theoretically based, longitudinal with a focus on when change occurs, consider direct and indirect effects, incorporate sociological perspectives to supplement the more typical psychological ones in many studies, and examine conditional effects for various student subgroups (e.g., by race, ethnicity, and gender).

Study Overview and Purpose

This study extended investigation of the “peer context” (Perkins & Berkowitz, 1986, p. 962) of alcohol use among college students to include a view of the peer influence processes context in order to augment understanding of peer influence as a major aspect of the “culture of drinking” (NIAAA, 2002, p. 1) on college campuses. The study examined hypothesized relationships among ten social-psychological constructs (three of them at two points in time) in a theoretically derived model in order to understand better the contributors to alcohol use among first-year college students.

As detailed later the theoretically-derived constructs, represented in this study as measured variables included: normative perception (measured twice); personal attitude (measured twice); personal status value; social identity/self-categorization; perceived

behavioral control; drinking intention; and alcohol use (measured twice). Table 1.1 lists by survey time the model-related variable names and their abbreviations within the model posited.

Table 1.1

Model-Related Variables, Abbreviations, and Survey Time

Survey Time	Variable Name	Abbreviation
T1	Normative perception	NP1
T1	Personal attitude	PA1
T2	Alcohol use	AU2
T2	Social identity/self-categorization	SISC
T2	Status value	SV
T2	Normative perception	NP2
T2	Personal attitude	PA2
T2	Perceived behavioral control	PBC
T2	Intention	IN
T3	Alcohol use	AU3

This longitudinal study used measured variable structural equation modeling with data gathered from surveys during the summer before students matriculated to the institution (Time One, pre-college), late-fall first term (Time Two), and early spring semester (Time Three), a vulnerable transition period for entering students (Weitzman, Nelson, & Wechsler, 2003). The study posited a theoretically derived path model of the

peer influence processes context of alcohol use among entering, first-year, traditional age, college students at a large mid-Atlantic predominantly residential, suburban public research institution. The model was developed using social-psychological concepts from both sociology and psychology. It was evaluated using multigroup analysis (e.g., by race/ethnicity and, where sample size allowed, by gender). The overarching purpose of the study was to help explain more fully through viable theoretical frameworks relevant contextual elements, processes, and structures of peer influences on drinking behavior among first-year college by racial-ethnic group and by gender where the sample size permitted (White students), thus furthering a theoretically-based research foundation for future intervention development. More specifically, there were four aims of the study with corresponding research questions:

Aim 1: To posit and test a temporally based, theoretically derived path model of the peer influence processes context of alcohol use among students incorporating three theoretical families used previously in alcohol-related research, and a fourth newly introduced to this area of study. The model included social norms theory, the theory of reasoned action, and its extension the theory of planned behavior, all previously used in alcohol-related or health behaviors research or both. Two additional theoretical families were integrated into the model, social identity/self-categorization (Turner, 1982, 1985), used rarely in alcohol-related research (e.g., Johnston & White, 2003), and status characteristics theory (Berger et al., 1966) and status construction theory (Ridgeway, 1991; Ridgeway & Balkwell, 1997), previously used to examine alcohol-related issues only in a preliminary study by this investigator (Snyder & Sedlacek, 2003).

Aim 2: To compare amount of variance explained through the model by subgroup.

Aim 3: To examine whether model was significantly different by race/ethnicity and gender; and,

Aim 4: To identify possible points of intervention by subgroup and for the larger first year population.

Research Questions

As will be elaborated later, the study hypothesized a path model (aim 1) integrating theoretical perspectives relevant to research on alcohol use among students and theoretical perspectives holding promise for informing explanation of the context of that use. The study compared amount of variance explained by the model by subgroup (aim 2). It examined contributions of variables in the model by subgroup (aim 3), and by points of potential intervention (i.e., increased risk or potential protection from risk) for subgroups and the first-year population generally (aim 4). The four research questions of the study are detailed further in Chapter Three.

1. *Model of Peer Influence Context of Alcohol Use Among College Students*: What are the relationships among the variables (e.g., normative perception/subjective norm, personal attitude, past behavior, social identity/self-categorization, status value, perceived behavioral control, intention, and behavior) posited in this model over time?
2. *Multi-group Analyses*: Does variance explained by the model differ by subgroup?
3. *Multi-group Analyses*: Do the relationships in the model differ significantly by race/ethnicity or gender?

4. *Points of Intervention:* Can the model demonstrate the paths of greatest or least risk by subgroup, and thus offer potential intervention points for different subgroups? Can the model demonstrate significant paths for high-risk behavior or lower-risk behavior common to all groups as potential points of population level intervention?

Definition of Terms

Following is a list of terms and related definitions used throughout the study.

Students

For the purposes of this study, in general discussion the word students refers to undergraduate college students, and when referring to study design and participants, to first-year entering college students of traditional age (i.e., 17-20 years) on the study campus who self-identified in one of the five racial-ethnic groups in the analysis and who did not identify as students studying in the U.S. on a student visa.

Racial-Ethnic Groups

Five racial/ethnic groups were included in this study: African American/Black, Asian Pacific American; Hispanic/Latino/Latina American; White American; and Multiracial/Biracial American. Students identified themselves as members of these groups. The Multiracial/Biracial American group included students who identified as being of more than one race but who did not identify as Hispanic/Latino/Latina. Students in the latter group sometimes identified themselves solely as Hispanic/Latino/Latina and sometimes also as a person of one or more other races. Even though the names used to describe the group are long in some ways, they are meant to be

inclusive rather than exclusive (e.g., Biracial students may not be multiracial or vice versa; some students who identify as Black may not identify as African American).

High Risk Alcohol Use

High-risk alcohol use is used generally to refer to the use of alcohol that has the potential to cause harm to self or others. More specifically, it is identified for measurement purposes in this study to be 5 or more drinks on one occasion, sometimes referred to as heavy episodic or binge drinking.

Significance of the Study

This study is significant for a number of reasons related both to research and to practice. A model was proposed and tested to examine relationships among constructs potentially important to the social-psychological peer influence process context of alcohol use by first-year college students. The study allowed examination of the model by racial-ethnic group, addressing a key deficit in the current literature, and by gender where the sample size allowed (i.e., White students), another area of limited research investigation.

The research permitted examination of the theoretically posited relationships among the variables traditionally used in social norms theory, a theory whose assumptions and practice were much debated at the time of the study. From the theory of reasoned action and the theory of planned behavior, the study examined the theoretically hypothesized relationships among the elements of personal attitude and subjective norm; perceived behavioral control and intention; and behavioral outcomes. It was thought that subjective norm, perceived behavioral control, and intention could help distinguish the relationships between a person's characteristics and a person's sense of social pressure

regarding alcohol use. Also examined was the question of whether, in this alcohol use context, normative perception influenced personal attitude, personal attitude influenced normative perception, or if there was somehow a significant “cross-over effect” (Oliver & Bearden, 1985) since this relationship is unresolved in the literature.

Most importantly, perhaps, in terms of developing a more comprehensive theoretical framework and extending contextual understanding of alcohol use among students, the study incorporated two more social psychological concepts, status (Berger et al., 1966) as operationalized by Ridgeway and colleagues (e.g., Ridgeway, 1991; Ridgeway & Balkwell, 1997) using status construction theory, and social identity/self-categorization (Turner, 1982, 1985). Social identity/self-categorization has been used in one prior study of college students and alcohol (Johnston & White, 2003). The idea of alcohol use and of social status being associated is new to alcohol-related empirical investigations, except in preliminary work by Snyder and Sedlacek (2003). These two variables were derived from a strong base of theoretical and research literature in social psychology. Coupled with SNT and TRA/TPB constructs previously investigated, these newly-introduced constructs extended the social norms and theory of planned behavior views of peer context in order to add structural dimension and dynamic to the study of peer influence on college student drinking and related contributions to alcohol use.

The longitudinal design used in this study offered a perspective not often available for college drinking variables and included variables new to this area of study. The study permitted examination of first-year students during an important transition period, prior to entering college and during the first year at two points after being in the college environment. The panel design provided a common sample across the three data

collection points, giving a more elaborate perspective than has sometimes been offered in alcohol-related research. The study allowed investigation of the relationships of constructs and related outcomes for students based on their own initial data rather than what would be available from a study using a comparison sample at different points in time.

The size ($N= 3505$ initial sample) and diversity of the sample allowed investigation of whether the model was significantly different by subgroup (i.e., race/ethnicity, and by gender for White students). Subgroup analyses including investigation of students from specific diverse racial and ethnic backgrounds, and to some extent study of college women and alcohol, are important limitations in the alcohol studies literature on college students. The subgroup analyses allowed greater understanding of how the constructs might be relevant for explaining variance in alcohol use among those groups, and what specific types of and times for intervention might be most relevant for them. Similarly, a comparison of the contributors to alcohol use among the various groups and the results of the statistical tests for significant difference (i.e., non-invariance) in model paths between the groups assisted in identifying what common points might be significant to all or most of the groups, thus suggesting time points for first-year student population level interventions. The study helped explain behavioral choices students make, and thus potential times, situations, and sub-populations and focus of intervention.

There were several additional strengths of the study. First, the sample was generally representative of the entering first-year class at a large public research institution with NCAA Division I sports, including football and basketball, a substantial Greek system, and predominantly residential first-year students. All of these campus

characteristics are correlated in research studies with greater misuse of alcohol among students (NIAAA, 2002). Additionally, the study provided for longitudinal tracking of student data using an online survey, a method applied successfully in previous similar research on the study campus (e.g., *University New Student Census*) and in other alcohol-related (McCabe, Boyd, Couper, Crawford, & D'Arcy, 2002) and more general (Sax, Gilmartin, & Bryant, 2003) studies of students.

The pervasiveness of the problem of alcohol abuse among students and the limitations of current and historical explanations and investigations of the problem and related issues leave the door wide open for investigations demonstrating good rationale and potential. This study has tried to provide both.

CHAPTER TWO

REVIEW OF THE LITERATURE

Overview

This chapter first recalls the purpose, theoretical foundations, and research questions for this investigation. After this, alcohol use is discussed as the outcome variable being explained in the study model. Next the chapter outlines the theoretically derived structural model, related theories applied in its development, and pertinent research literature regarding the variables, model, and theories in the investigation. Finally, a discussion is presented of how the current study links with past research and the “peer context” (Perkins & Berkowitz, p. 962, 1986) and how it is distinct and extends our knowledge of the culture of drinking among college students, as called for by the 2002 NIAAA report. The case is thus made for this longitudinal investigation of the hypothesized social-psychological dimensions of a peer influence processes context in relationship to alcohol use behavior among entering first-year students from pre-college through early second semester.

Study Purpose

The overarching rationale for this study was to develop further a theoretically grounded research base from which to explain variance in alcohol use among students, leading eventually to support of intervention development for reducing high-risk drinking among college students, particularly first-year students. The study accomplished this by extending investigation of the social-psychological peer influence processes context of alcohol use among first-year students and by integrating relevant theoretical contributions and examining them by race-ethnicity and by gender where the sample size allowed.

A model was posited which extended discussion regarding “peer context” (Perkins & Berkowitz, 1986, p. 962) aspects of college student drinking represented in social norms theory (SNT) (Perkins & Berkowitz), normative perception, personal attitude, and behavior. It also included variables from the theory of reasoned action/theory of planned behavior (Fishbein & Ajzen, 1975; Ajzen, 1985, 1991) subjective norm, an affective measure of personal attitude, perceived behavioral control, and intention. The social identity/self-categorization variable was developed from theoretical work by Turner (1982, 1985). Finally, status value was developed by work on status theory (Berger, Cohen, & Zelditch, 1966) and status construction theory (Ridgeway, 1991; Ridgeway & Balkwell, 1997). Together these variables were modeled to explain the process and content of alcohol use among college students.

Theoretical Literature, Final Endogenous Measured Variable,
Research Findings, and Proposed Model

A theoretically derived, temporally based model analyzed in the study is presented here. The theories and research literature related to the hypothesized model are discussed, at the end of which the path model under study is identified. As presented, the model poses two exogenous variables, pre-college normative perception and pre-college personal attitude, seven intermediate endogenous variables (fall term alcohol use, social identity/self-categorization, status value, fall normative perception, fall personal attitude, perceived behavioral control, and intention) and the final endogenous variable, spring alcohol use.

The model included measures for three variables derived from social norms theory (Perkins & Berkowitz, 1986), at three different points in time: normative

perception (NP), personal attitude (PA), and the behaviorally measured final variable, of alcohol use spring term (AU3).

A family of two related theories, the theory of reasoned action (TRA) (Fishbein & Ajzen, 1975) and the theory of planned behavior (TPB) (Ajzen, 1985, 1991) includes the variables of behavior, personal attitude, and subjective norm, a normative influence variable different from that of normative perceptions as studied in social norms theory. In addition, both TRA and TPB incorporate the variable of intention to engage in the behavior, hypothesized by the theories as the most proximal predictor of behavior; intention is posited to be predicted from personal attitude and subjective norm. The elaboration of TRA, the theory of planned behavior (TPB), additionally includes the variable of perceived behavioral control (Ajzen, 1985, 1991), hypothesized to predict both behavior and intention. The two theories are very similar to social norms theory because of the variables under investigation and because they are represented by causal models denoting temporality of relationships among variables. Including discussion of them and related studies was important to this investigation, as was including the additional variables they introduced. This two-theory family offered additional elements to the model and extended the view of personal attitude and normative perception from social norms theory. Measures from TRA/TPB included personal attitude (PA) and subjective norm (SN), past behavior (PB) (Ajzen, 2002b), perceived behavioral control (PBC), and intention (IN).

Finally, the study also included concepts related to social status and social identity, elaborating on the ideas represented in the concept of attitude and in the concepts of subjective norm and normative perception by integrating theoretical

perspectives new to the study of alcohol use generally, and specifically to the study of alcohol use among students. The variables of personal status value and peer alcohol status belief were developed using status characteristics theory (Berger et al., 1966) and status construction theory (SCT) (Ridgeway, 1991, 2000; Ridgeway & Balkwell, 1997). Building from Tajfel and Turner's work (Tajfel & Turner, 1979; Turner, 1982) on social identity, the concept of social identity and its related processes were operationalized using work by Turner (1985) on social identity (1982) theory and self-categorization theory (SC) (1985). Status value was included in the model as a contributor to alcohol use at Time Three. Although status belief was not ultimately included in the model, in part due to sample size and discussed in Chapter 3, the discussion of it as a construct is retained here because of its importance to understanding the research surrounding it as a rationale for including status value in the model.

In sum, the study extended the discussion and representation of the peer context of alcohol use in order to explain alcohol use among college students. It enhanced understanding of the relationships between personal attitude, normative perception (including subjective norm), and reference groups, constructs studied by various researchers (e.g., Dowdall & Wechsler, 2001; Haines & Spear, 1996; Keeling, 1999, 2000; Perkins, 1997; Perkins, 2003; Perkins & Berkowitz, 1986; Trockel et al., 2003; and Wechsler et al., 2003) and the relationship of those constructs to subsequent high-risk alcohol use behavior. This investigation additionally integrated theories and concepts related to social norms with those posited to develop from pre-college attitudes and norms—namely social identity/self-categorization, status value, fall term personal

attitude and normative perception, perceived behavioral control (one's perceived ability to choose a behavior), and intention—and ultimately to contribute to behavior.

The Final Endogenous Measured Variable:

Alcohol Use Behavior

Key related literature and rationale for development of the alcohol use construct are provided below. This study was directed at understanding college student drinking in a peer influence context. Theoretical perspectives in the study all permitted use of behavioral measures as a mechanism for understanding that influence in the social context. Behavior can be a consequence of the influence process (e.g., Fishbein & Ajzen, 1975; Perkins & Berkowitz, 1986; Turner, 1982, 1985). More specifically influence in the context of alcohol use among college students is also about behavioral risk. It is about risk to self and others of harm and related negative consequences (Gruenewald, Johnson, Light, Lipton, & Saltz, 2003; National Research Council and Institute of Medicine, 2003). Understanding risk requires indication and understanding of levels of risk, whether at the low-risk end of a continuum, at the high-risk end, or somewhere more moderate in the middle of that continuum. Investigators have examined alcohol-related drinking behavior among college students in a number of ways, all somehow related to risk, whether viewed that way or not (Gruenewald et al., 2003).

Investigators studying alcohol-related behavior among college students typically have included indicators of both quantity and frequency of use (e.g., Johnston & White, 2003). More subjectively defined measures have been used as well (e.g., Perkins & Berkowitz, 1986). Categorical, interval and ordinal measures have all been used to understand amount of alcohol consumed as well as frequency of that consumption.

Studies have used indicators of high-risk drinking over a two week period, reflecting both quantity and frequency through a specified definition of high risk drinking frequency and number of occurrences in that time (e.g., Johnston & White). Other indicators of quantity of alcohol use have included examination of the number of drinks typically consumed in one sitting (e.g., CORE Institute, in O'Malley & Johnston, 2002), on a single occasion (Johnston & White), or when partying (Haines & Spear, 1996). Some indicators ask students their frequency of consumption in a 12-month period (Arria, 2004), one week period (Trochel et al., 2003), 2-week period (Clapp et al., 2003; Johnston & White), 4-week period/28 days (Clapp et al.), one-month period (e.g., National College Health Risk Behavior Survey, [Centers for Disease Control, 1997] in O'Malley & Johnston). It is apparent that there are ranges of measures used, even among surveys national in scope (O'Malley & Johnston). The development of consistent measures that are both valid and reliable continues to be of concern (Baer, 2002).

Another area that had not met full resolution at the time of the development of this study is what defines high risk drinking and for whom. There are some researchers who would define high-risk drinking differently for men and women, with high risk being 4 or more drinks on a single occasion for women and 5 or more for men (Wechsler, Davenport, Dowdall, Moeykens, & Castillo, 1994, in Johnston & White, 2003). There are also national studies that continue to use a definition of 5 or more drinks on a single occasion as their definition for heavy episodic, or high risk, drinking (O'Malley & Johnston, 2002). This 5-or more drinks definition for both men and women was used recently in the study by Johnston and White (2003) as well. Johnston and White noted that Wechsler et al., (in Johnston & White) cited the definition of 5 or more drinks for

both women and men as problematic. However, using the 4 for women/5 for men definition proposed by Wechsler et al. was also viewed as problematic according to other researchers (e.g., Ford in Johnston & White). Johnston and White chose to use the definition of 5 or more drinks as high-risk drinking for both men and women because it has been used in major national studies such as the *National College Health Risk Behavior Survey*, the *National Household Survey on Drug Abuse*, and *Monitoring the Future*. A single definition was used in the present study for some of the same reasons. However, it is important to note that after the development and data collection for this study, the NIAAA (2004) adopted an official definition of binge drinking (high-risk) which was 4 or more drinks in a 2 hour period for women and 2 or more drinks in the same amount of time for men.

As noted, behavior has been identified as a consequence of influence (Turner, 1982, 1985). In a modeling process such as structural equation modeling (SEM) used in this study, behavior can be predicted from antecedent variables. In this study SEM was used to identify a theoretically derived model and then to test the explanatory capacity of that model and the specific constructs within it.

Underlying the quantity and frequency of alcohol consumption, behaviors that can be measured, is some level of risk for use of alcohol. In an influence context such as that in the model being investigated here, particular behavioral indicators are important (e.g., how many drinks in a two-week period). However, perhaps more important in a practical sense for predicting high-risk quantity and frequency of alcohol use in a peer influence context are the antecedents to that use as well as the risk level of use involved. Risk level of use is an underlying element that can be examined through SEM. Thus the

latent, or underlying, construct or variable of interest in this study is the level of risk of alcohol consumption behavior. Although the sample size precluded using latent variables to examine the different groups, measured variables were used in a scale form as a rudimentary way in which to look at this risk. Thus the final variable in the model was alcohol use at Time Three (AU3). Measures included the frequency of consuming 5 or more drinks in the past two weeks as the indicator of high-risk drinking as well as the quantity and frequency of drinking alcohol in the past four weeks (Clapp et al., 2003).

Social Norms Theory: Theory, Research, Critique

The Theory and General Critique

As previously identified, a cultural approach to understanding college student alcohol use and intervention for reducing it is the social norms approach (Perkins, 2003). Social norms theory (SNT) originated with sociologist H. Wesley Perkins and psychologist Alan D. Berkowitz (1986). It essentially argues that students misperceive the actual attitudes and behaviors of their peers, and in the case of alcohol use, assume their peers to be more liberal (i.e., risky) than they are in both behavior and attitude. Further, according to the theory, the greater the degree of a person's misperception of those normative attitudes and behaviors (i.e., what "most people" think or do [Perkins, 1997, p. 178]), the greater the incidence of high-risk alcohol for that student. Social norms theory posits that normative perception contributes indirectly to behavioral outcomes through personal attitude (Perkins & Berkowitz, 1986). Further, the theory argues that by reducing the degree of misperception (i.e., by bringing the riskier normative perception of peer attitude or behavior more in line with the actual, generally more conservative, peer attitude or behavior) among students through related

intervention, the incidence of high-risk alcohol use among can be reduced (Perkins, 2003; Perkins & Berkowitz, 1986). As Berkowitz (2004a) stated, “social norms theory describes situations in which individuals incorrectly perceive the attitudes and/or behaviors of peers and other community members to be different from their own when in fact they are not” (p. 2). Further, he stated, “social norms theory predicts that interventions to correct misperceptions by revealing the actual, healthier norm will have a beneficial effect on most individuals, who will either reduce their participation in potentially problematic behavior or be encouraged to engage in protective, healthy behaviors” (p. 3). In another document, Berkowitz (2004b) added,

social norms theory...states that our behavior is influenced by incorrect perceptions of how other members of our social groups think and act.... The theory predicts that overestimations of problem behavior will increase these problem behaviors while underestimations of healthy behaviors will discourage individuals from engaging in them. Thus, correcting misperceptions is likely to result in decreased problem behavior or increased prevalence of healthy behaviors.... By presenting correct information about peer group norms in a believable fashion, perceived peer pressure is reduced and individuals are more likely to express pre-existing attitudes and beliefs that are health promoting.
(p. 5)

As stated by Perkins (2003) and Berkowitz (2003), social norms theory thus presupposes an influence of normative perception on behavior and further anticipates that intervention can influence normative perception of peers’ alcohol use and their attitude

toward its use, as well as an individual's use and attitudes toward use (e.g., Haines & Spear, 1996).

As detailed later in this chapter, research studies using social norms theory and the social norms approach (i.e., targeted media campaign interventions revealing the true lower norms to correct higher norm misperceptions and thus reduce high risk alcohol use among students) have reported divergent findings about the application of the theory and intervention method (e.g., Carter & Kahnweiler, 2000; Haines & Spear, 1996; Keeling, 1999, 2000). There are questions about whether using the social norms approach actually reduces alcohol use among students (Campo, 2003; Carter & Kahnweiler; Clapp et al., 2003), is applicable to all groups (e.g., Carter & Kahnweiler), and whether it may be related to increases in alcohol use among some groups (e.g., Wechsler et al., 2003). Additionally, little is known about the changes in perceptions, attitudes, and behavior for the *individual* student over time rather than for a campus (e.g., Haines & Spear, 1996) or campus organization (e.g., Trockel et al., 2003) from one data collection to the next. The application of social norms theory in relation to alcohol use among college students is based on fundamental assumptions about the influence of normative perception on behavioral outcomes in a college peer context of alcohol use. The model in the present study used constructs and relationships hypothesized by social norms theory (Perkins & Berkowitz, 1986) to examine the relationship among normative perception, personal attitude, and behavior over time for students (i.e., using panel data with a common sample over time) and among different student subgroups (i.e., by race- ethnicity, and by gender where the sample size allowed) in an attempt to understand better the nature of the relationships, when, and for whom.

Social Norms Research: The Relationship of Personal Attitude, Normative Perception, and Quantity and Frequency of Drinking Alcohol

Since its initial development in 1986 (Perkins & Berkowitz) and the foundational study (Haines & Spear, 1996) of a social norms campaign intervention using the theory, social norms theory and related social norms campaigns have been used on more and more college campuses and are hotly debated in research and in the press. Research studies investigating the applicability of a social norms approach to reducing alcohol use by students has tended toward cross-sectional studies (e.g., Campo, 2003; Perkins and Berkowitz, 1986) and studies using aggregated results across time without examining change over time for individual students (e.g., Haines & Spear) in a sample or within particular subgroups of students as called for by Keeling (1999, 2000) and others. Results of some studies have demonstrated positive results of social norms applications (e.g., Haines & Spear, 1996), while others have found mixed results (e.g., Carter & Kahnweiler, 2000). These and related issues have left uncertainty about the utility of the theory and its application for reducing alcohol use by students (Keeling, 1999, 2000).

Foundational Studies

Two key studies initiated social norms theory and its application to alcohol use on college campuses, an applied theoretical study focused on alcohol use and the peer and social context (Perkins & Berkowitz, 1986) from which social norms theory developed, and an intervention study using the initial 1986 work as its foundation (Haines & Spear, 1996).

Perkins and Berkowitz. Perkins and Berkowitz (1986) initiated their study as a means to move beyond previous research that tended toward simply documenting alcohol

related attitudes and use patterns among students. They suggested that peer and social influences were important determinants of attitudes and use, citing studies suggesting such in their rationale. Their study examined the “peer context” (p. 962) of alcohol use among college students on one small liberal arts campus in order to understand better the constructs they hypothesized as important to the quantity and frequency of student alcohol consumption over a two-week period. The authors, as part of a campus wide initiative, developed a comprehensive alcohol-related survey and solicited participation from the entire campus. Their final sample ($N=1116$) was 64% of the campus, and was representative of the campus population in terms characteristics being studied (i.e., class representation, gender, type of living unit).

Using regression analyses Perkins and Berkowitz (1986) examined drinking behavior, using four quantity and frequency measures to create an index (internal reliability $\alpha = .73$), as the dependent variable and perception of norms, personal attitudes, gender, type of living unit as independent variables, in addition to another independent variable, “perception-attitude discrepancy” (p. 968) calculated from the difference between one’s personal attitudes and one’s perception of the norms.

A number of key findings came from this study. First, Perkins and Berkowitz (1986) found that there was low correlation (Pearson $r = .16$) between personal attitudes and normative perceptions, suggesting that “it appears that personal attitudes and perceptions of the norm are essentially distinct” (p. 965) and should each be considered when evaluating drinking behavior. Second, personal attitude and drinking behavior had a moderate correlation (Pearson $r = .47$) and normative perception and drinking behavior had “virtually no direct association” (Pearson $r = -.07$). The authors rightly pointed out,

however, that there could be an indirect effect of normative perception on behavior. They developed an index to assist in this evaluation, the “perception-attitude discrepancy” (Perkins & Berkowitz, p. 968). This index quantified how much discrepancy existed between normative perceptions one held of others’ attitudes and behaviors and one’s own attitude or behavior. This index served as an additional independent variable.

When regression analyses were conducted, Perkins and Berkowitz (1986) discovered that personal attitude (very liberal), gender (male), and the perception-attitude discrepancy index (most discrepancy) were all significantly predictive of drinking behavior, as was housing type, with small residences, fraternities, and off-campus housing significantly predicting higher risk quantity and frequency of alcohol consumption. Personal attitude and gender were most predictive with standardized regression coefficients of .34 and .25 respectively ($p < .001$). Drinking behavior regressed on the perception-attitude discrepancy index had a regression coefficient of .20 ($p < .001$), above and beyond all the other independent variables together, including personal attitudes and perceptions of norms. There were significant standardized regression coefficients for fraternity house (.12, $p < .001$), off-campus (.10, $p < .01$), and small residence (.08, $p < .01$), as well. Class year, major, and perception of the norm had no significant direct effect on drinking behavior in their study.

Perkins and Berkowitz (1986) also examined the relationship of drinking behavior and of perception-attitude discrepancy to the type of social environment a student preferred. Findings indicated that students who drank more preferred larger social settings (e.g., campus parties, fraternity activities open to the campus), and that those students who drank less preferred to socialize in smaller, more intimate settings. The

researchers found that students who had greater consistency in their personal attitude and perception (and thus a lower discrepancy), tended to prefer larger social settings, perhaps, authors suggested, because they viewed broader campus norms as compatible with their own. Similarly, students with greater inconsistency between personal attitude and normative perception tended to socialize in smaller social gatherings, again perhaps because of their view that the campus norms were less compatible with their own.

Data for this study (Perkins & Berkowitz, 1986) were gathered in 1978-1979 when the drinking age was 18 in New York. The authors noted a follow-up study for which data were collected in 1982 ($N=1,514$) and 1984 ($N=860$) once the drinking age had changed to be 21 years old. Findings for those two samples demonstrated “virtually the same patterns of predominantly moderate personal attitudes coexisting with a liberally misperceived norm for alcohol use” (p. 974), suggesting, Perkins and Berkowitz argued, a pattern not tethered to a single year or historical circumstance. They also noted that their findings, though local in nature, “paralleled the findings of a representative survey of over 7,000 New England students from 34 colleges and universities (Wechsler and McFadden, 1979)” (p. 975).

Perkins and Berkowitz (1986) suggested that by correcting misperceptions of the norm among students, students with the riskiest drinking patterns might then alter their patterns toward a lower risk one to be more consistent with the norm. They cautioned, however, that by making the true norm known, those persons with more moderate or conservative attitudes might be encouraged or supported to drink more, recognizing their inconsistency with the actual campus norm for consumption.

Haines and Spear. Following the study by Perkins and Berkowitz (1986), Haines and Spear (1996) developed an intervention based on what later became known as social norms theory, developed by Perkins and Berkowitz (1986). The Haines and Spear study is a key one cited by investigators using social norms theory. The study, supported by the Fund for the Improvement of Secondary Education (FIPSE), took place at Northern Illinois University, a large, public, predominantly residential institution of about 23,000 students, over a five-year period from 1988 to 1992. Researchers used a quasi-experimental design, surveying a convenience sample of five annual cohorts, one each year ($N=644$, 1988, lowest reported; $N=814$, 1992, highest reported). The sample was predominantly undergraduate students, with more first and second year students than juniors and seniors, and was gained through researcher visits to required general education classes.

The key dependent variables were participants' self-reported perceptions of how many drinks a typical NIU student drank when partying and the number of drinks that the participant said he or she consumed when partying (Haines & Spear, 1996). The independent variable was type of intervention: (1) traditional (e.g., teaching refusal skills, policy shifts, increasing student knowledge of risks of drinking) or (2) based on clarifying the actual behavioral norms of NIU students. Additionally, the study used a comparison group who took the *Monitoring the Future Survey* (MtF) during the same years as the Haines & Spear study. *Monitoring the Future* is a national survey of approximately 17,000 high school seniors conducted since 1976. "Since 1980 it has annually surveyed members of the four previous classes; these surveys include many respondents who are currently full-time college students (about 1500 students per year)" (O'Malley &

Johnston, 2002, p. 24). This comparison group permitted examination of the NIU data in relation to national trends.

Haines and Spear (1996) collected baseline data in April 1988. In April 1989 they collected data regarding the traditional style intervention they implemented in the academic year 1988-1989. From 1990 to 1992, inclusive, they collected data each April regarding the media campaign social norms intervention used that particular year. During those years, the only changes to the intervention were in the actual data shared in the campaign (e.g., the percentage of students who reported they drank 6 or more drinks when they partied). This was done since that number needed updating from the previous April's data collection in order to be accurate. The rationale for the study was that traditional approaches to reducing alcohol use among students had a very limited history of making any significant difference, both in the literature and on their campus.

Findings were encouraging, both to the study authors and to others in the field of alcohol education. Although there was a slight increase in reported drinking behavior by students, there was no significant increase or decrease in perceptions or self-reported drinking behavior in the year (year 2, 1989; baseline year 1, 1988) when the traditional intervention was implemented. During years 3 through 5 (1990-1992), chi square analyses revealed there was a significant reduction (p values ranged from $<.01$ to $<.001$) each year both in how much students thought their peers consumed, as well as in how much they reported consuming themselves. The study reported an 18.5% reduction in the perception of "binge" (Haines & Spear, p. 134), or high-risk, drinking over the five-year period, from 69.7% of students reporting they thought most students drank 6 or more drinks (binge definition used by the authors) when they partied in 1988 to 51.2%

reporting this in 1992. Similarly, the researchers found an 8.8% reduction in self-reported binge drinking of the participants over that same time frame. Further, these reductions took place at a time when nationally there was no such decrease. Chi square analyses demonstrated that when compared to the national sample from *Monitoring the Future*, the NIU sample reported significantly less drinking (1990 $p < .10$; 1991 and 1992, $p < .001$) than the national sample. Note that Haines and Spear use 6 or more drinks as high risk, whereas the items in *Monitoring the Future* at that time examined 4 or 5 drinks as high risk (Institute for Social Research, 1995).

The Haines and Spear (1996) study was consistent with that of Perkins and Berkowitz (1986) in finding that there was a discrepancy between one's own reported drinking behavior and that perceived as the drinking behavior of most other students on campus, with a tendency toward overestimating the campus norm. Aside from their acknowledged limitations of the quasi-experimental design and self-reported drinking behavior of participants, Haines and Spear were encouraged that perhaps the social norms intervention had influenced the significant reductions of reported drinking and the comparative perceptions of normative drinking levels. These findings offered hope in light of traditional interventions that in this study found no significant reductions in drinking behavior reported or in the perceptions of campus norms.

General studies. Since the two foundational studies, there have been a host of others using Social Norms Theory (Perkins & Berkowitz, 1986) and/or the social norms approach (i.e., media campaigns, individual normative feedback intervention sessions). There are criticisms of the theory and its application (Wechsler et al., 2003), as well as the methods used to conduct the research (Campo, Brossard, Frazer, Marchell, Lewis, &

Talbot, 2003; Keeling, 1999, 2000). Some studies have found support for social norms theory and related interventions (e.g., Mattern & Neighbors, 2004), while others have found problems with the theory or its application among certain populations (e.g., Carter & Kahnweiler, 2000; Wechsler et al.).

Preliminary Analyses on Study Campus:

Misperception of Norm Consistent with Social Norms Theory

A number of alcohol related items were included in the 2001 ($N=2,991$) and 2002 ($N=1,689$) administrations of the *University New Student Census* (UNSC) on the study campus. The UNSC is an online survey conducted during summer orientation for fall entering first-year students at a large metropolitan university in the mid-Atlantic. It asks students their ideas, experiences, and attitudes on a wide range of topics and has been in operation on the study campus for over 45 years. This instrument served as the summer 2004 Time One data point for the current study.

Analysis of the UNSC data for 2001 and 2002 (Snyder & Sedlacek) provided an overview of recent alcohol-related attitudes, perceptions, and behaviors among first-year students. In 2001 students viewed themselves as having lower-risk attitudes toward drinking than they perceived most other students at their University to have. By example, nearly 11% of respondents said that “drinking is never okay,” but they perceived only 1% of “most other students” at their University as having this attitude (Snyder & Sedlacek, 2001). According to UNSC 2002 data, students viewed themselves as having lower-risk attitudes about drinking than they perceived most other entering first-year students from their institution to have. Similar to the 2001 example above, 10% of the respondents indicated drinking was “never okay” but perceived less than 1% of other entering first-

years felt this way (Snyder & Sedlacek, 2002). These findings are consistent with social norms theory and with findings from Perkins and Berkowitz (1986) as well as Haines and Spear (1996).

Findings Specific to Subgroups Under Investigation

A key criticism of social norms theory is that it may operate differently among different groups of students and that examination of the constructs and their relationships should be evaluated carefully among various subpopulations (e.g., Campo et al., 2003; Carter & Kahnweiler, 2000; Wechsler, Nelson, Lee, Seibring, Lewis, & Keeling, 2003).

The social norms approach and social norms theory have been examined to some extent among college students generally (e.g., Borsari & Carey, 2003; Campo et al.; Clapp et al., 2003; Haines & Spear, 1996), and among Greek-affiliated students (e.g., Carter and Kahnweiler, 2000) with conflicting findings about the utility of the theory and approach. In their study of Greek fraternity men in 13 fraternities ($N=709$), Carter and Kahnweiler found no healthy drinking norm among that group, as well as a tendency to be influenced by norms from within their own groups rather than from the larger campus population. According to Carter and Kahnweiler this suggested, broad social norms campaigns aimed at the general student body and using norms from that population are likely to be ineffective among Greek groups. This was a well-developed study but there have been few like it examining social norms theory among Greek students. Even among the general student body and Greek students specifically, research has been too limited to develop a clear understanding of the operation of the theory or of social norms campaigns (Campo et al.; Clapp et al.).

Further limitations exist in terms of investigating the theory and its application among women and among different racial groups. Very few studies have examined the utility of the theory in these ways. Campo et al. (2003) did develop an empirical study ($N=550$) that examined the conditional effects of race/ethnicity and gender using structural equation modeling. They found that both men and women, for instance, were more likely to be influenced by the perceived drinking norms of their male friends. Thus for men, influence was by friends of the same gender and for women by friends of the opposite gender. White students and women were found more likely to overestimate the drinking norms of their friends, although women tended to drink less than men overall. Race was not a significant predictor of the degree of misperception, however, in the Campo et al. study.

Similarly, in their meta-analysis of 23 studies examining constructs in the social norms approach, Borsari and Carey (2003) found that women exhibited a greater degree of misperception than did men, which they said suggested that “normative information may have to be gender specific to have an effect on women’s alcohol-related behaviors and attitudes” (p. 338). On the other hand, Clapp et al. (2003), in a controlled study of a social norms marketing campaign using comparison residence halls, no significant effects were found for class standing or gender in preliminary ANOVA analyses, so they removed those variables for the final analyses.

Critique, Unanswered Questions, and Rationale for This Investigation

Social norms theory (Perkins & Berkowitz, 1986) says that by correcting misperceived normative perceptions to bring them more in line with actual, typically more conservative normative perceptions, then actual behavior will move toward the

more accurate behavior and thus generally be less risky. The theory posits that normative perception influence individual behavior through personal attitude. Except in the study of personal feedback interventions (e.g., Agostinelli), this influence has not been clearly demonstrated in the literature except at the individual level. There are divergent findings, regarding what influence if any normative perception has on behavior (e.g., Carter & Kahnweiler, 2000; Haines & Spear, 1996; Keeling, 1999, 2000; Perkins & Berkowitz, 1986) and for whom (e.g., Carter & Kahnweiler).

To date, most related studies except the original (Perkins & Berkowitz, 1986) have been associated with an intervention (e.g., Haines & Spear, 1996). Unlike other studies at a population level, the current investigation did not evaluate an intervention using social norms theory but rather examined the underlying premise of causal influence of alcohol-related personal attitude and normative perception on alcohol-related behavior over time and the assumption of that influence among specific subgroups. Likewise, the study examined what, if any, influence behavior has on normative perception and personal attitude over time.

Social Norms Theory Variables in the Model

Social norms theory brought the constructs of personal attitude (PA), normative perception (NP), and behavior (b) to the model under study. The model represented the theory using sub-scales for normative perception and personal attitude integrated with other theoretical perspectives on normative perception and personal attitude. Survey data collected over three points in time were applied to a measured variable structural equation model. Survey data included Time One (summer before entering the University), Time Two (late fall term), and Time Three (early spring semester), a

transitional timeframe for entering first-year students (Chickering, 1969; Chickering & Reiser, 1993; Pascarella & Terenzini, 1991). Variables included personal attitude at Time One (PA1), personal attitude at Time Two (PA2), normative perception at Time One (NP1), normative perception at Time Two (NP2), alcohol use behavior at Time Two (AU2), and alcohol use behavior at Time Three (AU3). Normative perception was measured using indicators of perceived drinking by other students as well as by perceived approval for drinking behavior by other students, including both descriptive (use) and injunctive (approval) measures as called for by the theory.

The Theory of Reasoned Action and the Theory of Planned Behavior:

Theory, Research, Critique, Rationale

This segment will describe both the theory of reasoned action (TRA) (Fishbein & Ajzen, 1975) and its extension, the theory of planned behavior (TPB) (Ajzen, 1985, 1991), diagramming the theoretical models for each. These two theories have provided the foundation for one of the most extensive research programs in social psychology (Trafimow & Finlay, 2001). Additionally, subsequent research related to the theories is discussed in terms of how it adds to the understanding of relationships among the constructs within the two theories. Because of how the two theories are related and because they are within a single research program, research from both theories was used in determining the model, although the model most directly reflects the theory of planned behavior.

Work by Berger and Zelditch (1993) has been used to describe the relationships and theoretical developments within a research program. This study used the Berger and Zelditch five-category taxonomy. Through the taxonomy, the theory of planned behavior

(Ajzen, 1985) can be considered both an “elaboration” (p. 5) and a “proliferation” (p. 7) of the theory of reasoned action, as will be demonstrated in more detail later in this section. First it is an elaboration because it is more comprehensive, has more analytic power, and because both theories “share the same family of concepts and principles and ... are addressed to the same general explanatory domains” (p. 5). Additionally, TPB can be considered a proliferation of TRA as well because it can predict more kinds of behavior than TRA, including what the original theory of reasoned action predicted. Subsequent research using the theories has suggested construct relationships different than those in the originally hypothesized theoretical models. The variations emerged when research used the same principles and concepts as the original theories but offered different ideas on how the processes occurred (Berger & Zelditch). Some of this research has contributed to the development of the proposed model, which offers construct relationships “variant” (Berger & Zelditch, p. 7) to the theory of planned behavior, while the original theory remains unchanged (e.g., Ajzen, 2001).

The Theories and General Critique

As with social norms theory, this family of theories examines attitude, behavior, and a normative perception construct, in this case, subjective norm. The theory of reasoned action (TRA) (Ajzen & Fishbein, 1973; Fishbein, 1967; Fishbein & Ajzen, 1975) was developed over ten years prior to social norms theory, while work on its extension, the theory of planned behavior (TPB) (Ajzen, 1985) was published just one year before social norms theory. Except for one study (Trochel et al., 2003) using a correlational design to examine one construct from TRA/TPB, subjective norm, and two variations of normative perception from social norms theory, a measure of perceived peer

approval of drinking (perceived injunctive norm) (Borsari & Carey, 2003)) and a measure of perceived peer consumption of alcohol (perceived descriptive norm) (Borsari & Carey), to predict individual and group alcohol consumption levels, social norms theory and TRA/TPB researchers appear not to have examined the two theories together, even though they are each used to study health behaviors, including student use of alcohol, have related constructs, and emerged in a similar time period.

These two theoretically derived models, TRA and TPB, have been useful in explaining and predicting behavior from intention, attitude, subjective norm (Ajzen & Fishbein, 1973; Fishbein, 1967; Fishbein & Ajzen, 1975), and, in the case of behavior not entirely under one's control, perceived behavioral control (PBC) (Ajzen, 1985, 1991). Together the theory of reasoned action and its elaboration (Berger & Zelditch, 1993), the theory of planned behavior represent the initiation of a broad research program. Review of these theories, their foundational studies, and subsequent related work informs the discussion regarding alcohol-related behavior among college students.

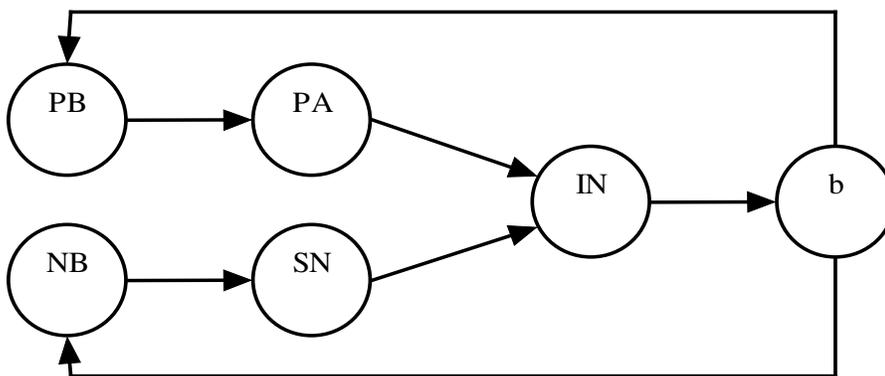
The Theory of Reasoned Action Explained

The theory of reasoned action (Ajzen & Fishbein, 1973; Fishbein, 1967; Fishbein & Ajzen, 1975) presents a theoretically based model to predict overt behavior. A major impetus for developing the theory was the failure of past studies to identify consistent relationships between attitude and behavior (Ajzen & Fishbein, 1973). The theory represents several basic constructs that together are said to predict the dependent variable, behavior. Intention is seen as the most immediately predictive measure of behavior, particularly when measured in close proximity to behavior (Fishbein & Ajzen, 1975). Two variables said to predict intentions are one's attitude toward the behavior and the

individual's subjective norm, or the perception that important referent others expect one to perform the behavior with respect to one's motivation to perform it (Fishbein & Ajzen, 1975). Attitudes toward a behavior are informed by one's beliefs about the consequences of that behavior. Subjective norms about a behavior are based on one's normative beliefs about a behavior multiplied by one's motivation to comply with the perceived expectations of important referent others. A major aspect of referent others is that who they are can vary with a situation, sometimes being a person's close friends or family, and at other times perhaps society or a more distant individual (Ajzen & Fishbein, 1973).

Figure 2.1 represents the theory of reasoned action (Fishbein & Ajzen, 1975), in which behavior (b) is posited to derive from intention to perform a behavior (IN), and intention to derive directly from both personal attitude toward a behavior (PA) and one's subjective norm about a behavior (SN) and indirectly from one's personal beliefs about consequences of a behavior (PB) and one's normative beliefs about a behavior (NB). Lines represent influence and feedback paths.

Figure 2.1. The Theory of Reasoned Action.



Note. Adapted from Fishbein & Ajzen, 1975, p. 16.

Key Elements and Assumptions of the Theory of Reasoned Action

A number of basic assumptions can be outlined regarding the theory of reasoned action. Three basic assumptions are primary in the predictive ability of the model (Fishbein, 1967; Ajzen & Fishbein, 1973; Fishbein & Ajzen, 1975):

- Timely measure of behavior after measure of intention;
- Measurement of behavior is under volitional control, meaning an individual has full control of the behavior choice;
- Specificity of the measure of intention.

Additionally, it is important to recognize that intention is posited to mediate effects of attitude and subjective norm on behavior. Two major elements, attitude and subjective norm, predict intention. Personal behavioral beliefs and normative beliefs are antecedent to personal attitude and subjective norm, respectively, each posited to predict the next directly. Other assumptions can be highlighted too: (Taken from Ajzen & Fishbein, 1973.)

- Attitude alone cannot consistently account for or predict overt behavior.
- The relative importance of attitude and subjective norm is influenced by situation, context, behavior and individual characteristics.
- Context and situation vary whether proximate or distant referents are most influential on subjective norm and thus on intention and behavior.
- The theory is based on an expectancy-value model. In other words, this means that attitude and subjective norm are believed to “develop reasonably from beliefs people hold” (Ajzen, 1991, p. 191), from what they expect will result from the behavior and how they value that behavior or result.

Finally, according to Smetana and Adler (1980) the theory “contains an implicit ordering of variables and is consistent with the assumptions of path analysis (Kerlinger & Pedhazur, 1973, in Smetana & Adler, p. 91), thus allowing measurement of both the strength and direction of relationships between and among variables.

Early Research, Method and Findings

Early research studies investigating the theory of reasoned action use experimental methods in a laboratory setting (Ajzen & Fishbein, 1973). Typically, analysis was done by multiple regression of attitude and subjective norm in predicting behavioral intentions (Ajzen & Fishbein). Factor analysis was also used (Carlson, 1968 in Ajzen & Fishbein), as was analysis of covariance (Ajzen & Fishbein).

Findings provided key information about the model (Ajzen & Fishbein, 1973):

- More specific measures of intention provided better correlations with behavior.
- Subjective norm was found to be more important under cooperative conditions.
- Attitude was found to be more important under competitive conditions.
- Studies demonstrated a somewhat stronger importance for attitude than for subjective norm, but this is “theoretically meaningless” (p. 50) because behavior, situations, and individuals differ.

Implications of the Theory of Reasoned Action

According to Ajzen and Fishbein (1973), perhaps the most fundamental implication of the theory and related empirical findings is that changing attitude alone will likely not change behavior. When considering behavior under one’s own control, one must manipulate attitude and subjective norm as predictors of intention and of behavior in order to change that behavior (Ajzen & Fishbein).

The Theory of Planned Behavior (TPB): An Elaboration of the Theory of Reasoned Action

Theory of planned behavior can be considered both an elaboration and a proliferation (Berger & Zelditch, 1993) of TRA. The theory includes all of the constructs of the TRA, but it expands it to include the construct of perceived behavioral control (PBC) (Ajzen, 1985, 1991). Although disputed later (e.g., Rhodes & Courneya, 2003) Ajzen, (1991) argued that this construct is related to Bandura's (1977, 1982 in Ajzen, 1991) concept of self-efficacy. It is intended to capture the extent to which a person believes he or she has the capacity to control overt behavior. The construct of PBC is predictive, according to Ajzen (1985), of both behavioral intention and overt behavior; antecedents to PBC were not hypothesized in the original model (1985, 1991) but control beliefs were added later (Ajzen, 2002) as antecedent to PBC.

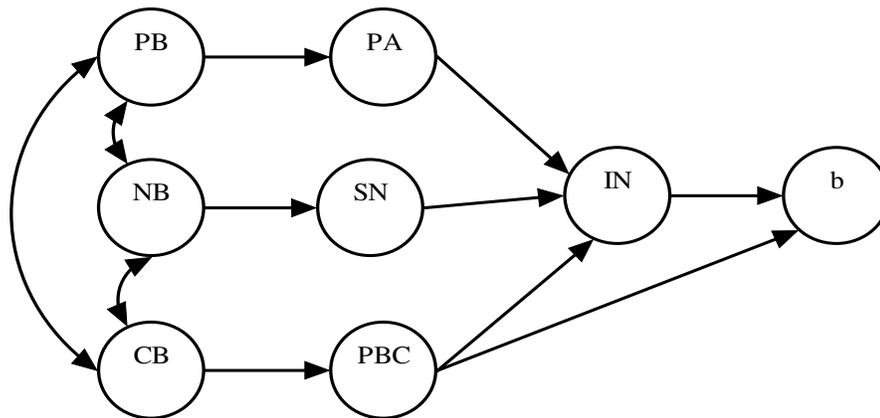
Through the construct of perceived behavioral control, Ajzen's theory of planned behavior, can account for behavior within one's control as well as behavior that is not entirely within one's control. According to Ajzen (1985), the theory of planned behavior thus extends the theory of reasoned action; in essence, he says, TRA accounts for behavior when one has "perfect" control and the TPB accounts for all behavior not within one's total control, which makes the TRA the case when PBC is at its highest (p. 36). In other words, when a person perceives that he or she has total control over a behavior is the case to which the theory of reasoned action can be applied. These circumstances of total control and all other cases, those in which one has less than total perceived behavioral control, can be explained via the theory of planned behavior.

Summary of the Theoretical Models

The theory of reasoned action (TRA) posits that intention to perform the behavior is the most proximal indicator of the behavior under study; intention is directly influenced both by personal attitude toward the behavior and subjective norm concerning the behavior. Personal behavioral beliefs and normative beliefs are said to predict personal attitude and subjective norm, respectively. Similarly, the extension of TRA, the theory of planned behavior, is identical except that it posits the variable of one's perceived behavioral control (PBC) directly influencing both intention and behavior (Ajzen, 1985, 1991), and control beliefs (Ajzen, 2002) predicting perceived behavioral control. The control, attitudinal, and normative elements are said to covary, but no direct influence relationship is posited in the theories.

In this figure, behavior (b) is said to derive directly from intention to perform a behavior (IN) and from perceived behavioral control (PBC). Intention, in turn, is posited to derive directly from personal attitude toward the behavior (PA), subjective norm (SN), and perceived behavioral control (PBC) and indirectly from personal beliefs about the behavior (PB), normative beliefs (NB), and control beliefs (CB). All belief constructs (PB, NB, and CB) are said to covary with one another. Figure 2.2 represents the theory of planned behavior.

Figure 2.2. The Theory of Planned Behavior.



Note. Adapted from Ajzen, 2002a, as updated from Ajzen (1985, 1991).

Related Research: Overview

In most senses for the purposes of this study, it is more specifically the theory of planned behavior under investigation. Using this theory rather than TRA permitted investigation of the degree to which subgroups of students perceived drinking alcohol in a campus peer context to be entirely under their control, something that has to date been examined in rarely on studies of student drinking (e.g., Johnston & White, 2003). However, because the theory and related research are reflective of the theory of reasoned action extended to include circumstances *in addition to* those in which an actor perceives he or she has full control over choosing the behavior, relevant research from studies of each of the two theories was included in determining the model. This is a common practice; in the related literature researchers frequently have used and referred to research from both theories to build a study foundation (e.g., Sheeran & Orbell, 1999; Terry & Hogg, 1996). Studies from the broader two-theory research program were used similarly in identifying the model.

Since their development, these two theories, both aimed at expanding the understanding of attitudinal influence on behavioral outcomes, have been used widely and, in general, successfully, to examine a variety of behaviors ranging from consumer choice behavior (Oliver & Bearden 1985) and lottery playing (Sheeran & Orbell, 1999) to health-related behavior (Godin & Kok, 1996), including alcohol use among college students (Johnston & White, 2003; Trockel et al., 2003). In most respects the theories have performed well, with the weakest influence typically detected from subjective norm to intention and behavior. The following sections present key general research studies regarding the theories, an overview of research applying the theories to health behaviors, and more specifically studies applying the theories to alcohol use among college students. Three specific areas are then identified for additional investigation in this study (i.e., the direct influence of subjective norm on personal attitude, a “crossover” relationships among attitudinal and normative constructs [Oliver & Bearden, 1985, p. 326], the direct influence of attitude and subjective norm on behavior, and the influence of attitude and subjective norm on perceived behavioral control). Another segment highlights key findings related to specific populations under study, with a final segment offering a summary critique, unanswered questions, and rationale for using the theories in the current investigation.

General Research Using the Two-Theory Family

The theory of reasoned action, and its elaboration the theory of planned behavior, both have been highly influential in examining behavioral outcomes (Ajzen & Fishbein, in press). In his 1991 examination of the function and sufficiency of the theory of planned behavior, Ajzen both confirmed the theory’s utility and offered areas for further

investigation, noting that there was not enough empirical evidence at the time to determine the theory's sufficiency (p. 204), in other words whether or not it contained all the relevant constructs and relationships necessary to explain as much variance as possible across varied domains and with varied samples. In 2001 Ajzen updated his statement regarding the theory's sufficiency. He argued that even though additional constructs have sometimes boosted the ability of the model to predict behavior, "for the most part the improvements in prediction of intentions or behavior were relatively minor, and their generalizability to other behavioral domains has yet to be demonstrated" (Ajzen, 2001, p. 45). Thus, unlike a decade earlier, Ajzen argued that the theory indeed demonstrated sufficiency because other constructs had not been able to improve the predictive ability of the theory, particularly across behavioral domains.

For his 1991 analysis Ajzen reviewed the findings of other studies and reanalyzed the data. He found that attitudes, subjective norms, and perceived behavioral control were "usually found to predict behavioral intentions with a high degree of accuracy.... [and that] these intentions, in combination with perceived behavioral control, can account for a considerable proportion of variance in behavior" (p. 206). Further, he concluded that the theory was able to predict across a wide range of behaviors and contexts and that it provided a number of constructs from which to understand and explain behavior and through which to develop behavior change interventions.

Additionally, Ajzen (1991) offered several key areas for future research and the potential for contributions of additional constructs in the model. He affirmed empirically, for instance, the importance of the distinctions between the constructs but offered that it was possible other relationships existed between constructs, citing as example Bentler

and Spekart's (1979 in Ajzen, 1991) suggestion "that attitudes not only influence intentions but also have a direct effect on behavior" (Ajzen, p. 199). Also relevant to the current investigation, Ajzen offered that the role of past behavior in predicting future behavior might be behavior specific, in other words it might vary from one behavior to another. His 1991 re-analysis of several studies employing past behavior suggested that the unique contributions of past behavior beyond the model might be method related except in the case of one study in which the variance explained increased by 32%, unlikely, he said, to be method related.

The Theories Applied to Health Behavior

The theory of planned behavior has been used frequently in the study of health behaviors (Godin & Kok, 1996; Johnston & White, 2003; Trockel et al., 2003). A key study examining the application of the theory to health behaviors is that by Godin and Kok (1996). In this investigation, Godin & Kok reviewed studies using the theory to examine health issues and to explain and predict health-related behaviors. In selecting studies for inclusion, they did not include those measuring intention and behavior simultaneously but only selected those examining behavior at a point in time after intention was measured. The fifty-six studies analyzed included 58 health-related applications ranging from avoiding caffeine and limiting infant sugar intake, to condom use or having a health check, to smoking cigarettes or using alcohol. Eleven of the studies related to addictive behaviors, including smoking, use of alcohol and other drugs, and disordered eating.

Findings from Godin and Kok (1996) demonstrated that the theory explained intention quite well (averaged $R^2 = .41$) and behavior somewhat less well (averaged

$R^2 = .34$). Attitudes and perceived behavioral control were generally significant predictors of intention. Intention was the most important predictor of behavior, although in about half the studies perceived behavioral control significantly and directly influenced behavior. They found that even though the model was effective in explaining intention, its ability to predict behavior varied by kind of health behavior investigated. It is clear from their analysis that some health behaviors are significantly predicted by the perceived behavioral control construct, extending the theory of reasoned action to make it the theory of planned behavior. In other words, there are some health-related behaviors over which people do not perceive complete personal control, thus contributing both directly and indirectly through intention to behavior.

Particularly in the studies of addictive behaviors (e.g., smoking cigarettes, drinking alcohol, using drugs, and disordered eating), the perceived limits on one's control over a behavior contributed significantly to predicting that behavior. In these studies of addictive behaviors, averaged correlations were strongest between intention and attitudes ($r = .53$), and between intention and perceived behavioral control ($r = .49$), and less strong between intention and subjective norms ($r = .32$). Perceived behavioral control averaged correlation with addictive behavior ($r = .51$) was nearly as highly correlated as intention was with addictive behavior ($r = .56$). Godin and Kok (1996) noted that with addictive behaviors, nearly 50% of the explained variance in the longitudinal studies was explained by perceived behavioral control directly rather than by intention. Their suggested explanation was that addictive behavior was determined not only by personal motivation but also by factors such as "addiction, easy access to health services, and availability of resources" (p. 93). Although studies they used to examine

the theory of planned behavior and its ability to explain and predict addictive behaviors were not studies of a *contextual environment* nor of alcohol abuse or misuse which is characteristically different than addiction, their analysis demonstrated both the utility of the theory and the potential for including more contextual constructs to boost the predictive ability of the model in the study of alcohol use behaviors.

In terms of the contributions of subjective norms, the authors (Godin & Kok, 1996) noted their findings were consistent with those of other investigations. The ability of the subjective norms construct to predict intentions was significant less often and at lower levels than the ability of attitudes and perceived behavioral control to predict intentions. Specifically, they suggested from Vries, Backbier, Kok and Dijkstra (1995 in Godin & Kok) that since adolescents are influenced by peer “modeling, the social influences may exert their effect via different routes, and ... [it may be important to measure] not only social norms but also perceived behaviors of others and pressure encountered from significant persons” (Godin & Kok, p. 94).

The Theories Applied to Alcohol Use Among College Students

Two recent investigations (Johnston & White, 2003; Trockel et al., 2003) have used the theories of reasoned action and planned behavior, or elements of them, to explain and predict alcohol consumption among college students.

Using a correlational design and hierarchical linear modeling in their analyses, Trockel et al. (2003) compared the ability of three normative influence factors to predict alcohol consumption behavior among fraternity men in two chapters ($N=379$). They examined predictive ability of the constructs both within chapters and between them. Comparisons were made between two normative perceptions constructs from social

norms theory (e.g., Perkins & Berkowitz, 1986), normative perception of alcohol consumption levels and normative perception of approval of drinking, and the subjective norm construct from the theories of reasoned action and planned behavior (Fishbein & Ajzen, 1975; Ajzen, 1985; 1991).

Findings indicated that normative perception of consumption behavior and subjective norm significantly predicted consumption levels of individuals both within and between chapters. Normative perception of approval of drinking was not significantly predictive of variance in alcohol consumption levels within or between chapters.

Acknowledging the correlational design of their study as a limitation of their findings, Trockel et al. (2003) suggested the importance of further investigation of the subjective norms construct, particularly among groups most at risk for abuse of alcohol, in order to understand their use and its relationship to the construct better. Subjective norms, Trockel et al. argued, had not been examined typically in the literature on college drinking and warranted greater examination. Indeed, their study and that of Johnston and White (2003) appear to be the only ones at the time of this writing to have investigated the role of subjective norms in college student drinking.

Johnston and White (2003) conducted a study with 289 undergraduate volunteer psychology students. They examined the prediction of high-risk alcohol use among students from the addition of group norms to the theory of planned behavior predictors. Their study used survey data collected at two points in time, measuring the final dependent variable, alcohol use behavior measured by a single indicator measure (i.e., consumption of five or more standard alcoholic beverages in a single session in the past two weeks), after the independent variables. Attitude, subjective norm, and self-efficacy

(their interpretation of perceived behavioral control) accounted for 69% of the variance in behavioral intentions. In this case of alcohol use among students, subjective norm was found to be a strong independent predictor of intention. Intention predicted behavior. Self-efficacy did not significantly predict high-risk drinking, perhaps, Johnston and White suggested, because they should have used control measures instead of efficacy ones. The study also found that the more strongly a respondent identified with their group, the more strongly that group norm predicted behavior; in other words, “the effects of norms were more important for individuals who identified strongly with the reference group” (p. 73). The ΔR^2 (.01, $p < .001$) for Step 2 of the hierarchical regression adding group norm was significant, as was addition of group identification by group norm interaction at Step 3 ($\Delta R^2 = .03$, $p < .0001$).

Findings Specific to Subgroups Under Investigation

Conditional effects of subgroup differences (e.g., race, gender, class standing) have been examined more extensively in the literature on the theories of reasoned action and planned behavior than in the literature related to social norms theory. There is still much to be understood, however, both about how the constructs and relationships operate for different subpopulations, and also how those constructs and their theorized relationships might operate for those groups when applied to the study of certain behaviors (e.g., alcohol use).

A number of studies have examined college students in order to understand the theory of planned behavior more fully (e.g., Hogg & Hardie, 1992; Ravis & Sheeran, 2003; Terry & Hogg, 1996; Trafimow, 2001). However, few have examined college students specifically to understand and address alcohol use within that population (i.e.,

Johnston & White, 2003; Trockel et al., 2003). Trockel et al. examined drinking and related normative constructs from the theory of planned behavior and social norms theory among fraternity men, with a largely first-year student participant group ($N=379$ in two large fraternity chapters on a single campus). Their findings indicated that descriptive behavioral norms and subjective norms were significantly predictive of alcohol use but that injunctive approval norms were not.

However, a potential weakness of their study was using the interpretation of *typical* member for developing the injunctive norm rather than the interpretation of *most* members, as social norms theory actually posits. *Most* is the word that studies by social norms researchers Perkins and Berkowitz (1986) and Perkins (1997) have used. It has different connotations and theoretical implications than does the term *typical*, as is required by social identity/self-categorization theory (e.g., Turner, 1982, 1985) studies.

Johnston and White's study examined the role of group norms and the theory of planned behavior in a study of 289 first year undergraduate students in psychology classes in an Australian university. Their study did not examine conditional effects of race or gender, for instance, but it did confirm the applicability of the theory of planned behavior and reference group norms among first year students in a context of alcohol use. Initial analyses by Johnston and White of their data demonstrated no differences by gender, so that variable was not used in the final analyses.

Conditional effects of race and ethnicity have not been examined frequently in the theory of planned behavior, perhaps an artifact of basic research in social psychology a field that has been criticized for assuming theories operate in similar ways across races. Ajzen (2001) has argued that addition of variables to the theory of planned behavior has

not necessarily improved its predictive ability. He cites Albarracin et al. (1997 in Ajzen, 2001) as an example of a study where the addition of demographic variables did not improve the ability of the model to predict condom use.

Critique, Unanswered Questions, and Rationale for This Investigation

Although no formal variations of the theory of planned behavior have been offered, research has suggested that the hypothesized relationships within the theory may be more complex than originally thought. In particular, the relationships among personal behavioral and normative belief structures and personal attitudes and subjective norms have not been clearly understood, although they have been examined in several different ways (e.g., Oliver & Bearden, 1985). There is evidence that there are “crossover” (Oliver & Bearden, p. 326) relationships among the variables and also evidence that there may not be a distinction between those two distal belief variables and the two more proximal to behavior, attitude and subjective norm. Additionally, a direct relationship of both attitude and subjective norm on behavior has been suggested, even though it is not hypothesized in the theoretical model. These two areas of research have offered the foundation for additional paths within the model for this study.

Researchers have demonstrated that there may be a direct relationship between personal attitude and behavior (Ajzen, 2002b; Bentler & Speckart, 1979), and one can imagine that within a college peer context a direct relationship between subjective norm and behavior may also exist. It is also plausible, especially in a college context where peers can influence one another (e.g., Astin, 1996), that personal attitude toward a behavior and subjective norm, or the perception one holds that important referent others expect one to perform a behavior, contribute directly to one’s perceived behavioral

control. These less understood relationships were hypothesized in the model along with the traditional ones from the theory of planned behavior.

The Theory of Reasoned Action/Theory of Planned Behavior Variables in the Model

The additional relationships that are suggested through the research and summarized in the previous section are hypothesized later in the description and illustration of the model. This investigation was based in part on the theory of planned behavior, as well as on research from both the TRA and the TPB, suggesting additional paths among constructs, namely direct influence of normative perception on personal attitude; of personal attitude on normative perception; of each personal attitude and normative perception on perceived behavioral control; and of each personal attitude and normative perception on behavior.

Defining the Constructs

Constructs from TPB in the model included subjective norm, personal attitude toward a behavior, perceived behavioral control, intention, and behavior. Subjective norm was measured at Times One and Two and, at Time One, and served as the part of the exogenous variable normative perception. Personal attitude was treated in the same way. Endogenous variables included personal attitude, subjective norm as an element of normative perception, alcohol use behavior, perceived behavioral control, and intention measured at Time Two, and the final endogenous variable, alcohol use behavior at Time Three.

Subjective norm. This study followed on the work of Trockel et al. (2003) cited previously which used the definition developed by Doll and Ajzen (1992) for perceived subjective norm as “beliefs regarding behavior ‘expectations of salient referent

individuals or groups” (Doll & Ajzen, 1992, p. 775 in Trockel et al., p. 51). Even though the Trockel et al. measures used one’s own fraternity as the reference group, the current study used the phrase “my friends” to focus participants on a reference group.

This choice was made in part because numerous studies have identified the importance of reference group as a key determinant of normative influence (e.g., Trockel et al., 2003). Additionally, a related study investigating the theory of reasoned action and the theory of planned behavior (Terry & Hogg, 1996) which used “friends and peers at the university” (p. 781) as the normative reference group, as well as a subsequent study basing reference group on Terry and Hogg’s definition (Johnston & White, 2003), seemed to this investigator to demonstrate less strength of normative influence on other constructs than one might anticipate among college students. The phrasing “my friends” used here was intended to be more proximal in determining reference group than the inclusion of “and peers at the university” would have been, more similar to working definitions reflected in the Trockel et al. study.

Personal attitude (affect). Unlike the unipolar way in which personal attitude has typically been measured in studying the construct for social norms theory (Perkins & Berkowitz, 1986), studies using the theory of reasoned action (Fishbein & Ajzen, 1975) and the theory of planned behavior (Ajzen, 1985, 1991) have more typically used bipolar measures to examine personal attitude (e.g., Drinking is... Pleasant and unpleasant serve as anchors on a 5-point scale) rather than a unipolar item (e.g., “Drinking is pleasant,” with a 5-point scale anchored with strongly agree and strongly disagree).

Fishbein and Ajzen (1975) have argued “the concept of ‘attitude’ should be used only when there is strong evidence that the measure employed places an individual on a

bipolar affective dimension” (p. 13). [See also Fishbein & Ajzen, 2000.] Further, they stated that “consistent with Thurstone’s (1931) position, attitude may be conceptualized as the amount of affect for or against some object” (p. 11) and accordingly, Fishbein and Ajzen (1975) based their recommendation for use of a bipolar dimension on Thurstone’s position, contending that affect has been found to be the “most essential” (p. 11) part of the complex concept of attitude. Affect, they stated, “refers to a person’s feelings toward and evaluation of some object, person, issue, or event” (Fishbein & Ajzen, 1975, p. 12) when contrasted with cognition, related to knowledge or beliefs, and conation, related more to behavioral intentions. In determining their stand on how attitude should be both defined and measured, Fishbein and Ajzen (1975) have stated that failing to use a bipolar dimension confounds measurement of attitudes with other constructs.

Further, Ajzen (2001) addressed what he termed a “resolution of the controversy regarding bipolarity of affect” (p. 29), commenting that although previous studies in the 1960s had suggested that positive and negative affect might actually be orthogonal to one another, recent studies (Feldman, Barrett & Russell, 1998 and Russell & Carroll, 1999, both in Ajzen, 2001) had

posed a serious challenge to this view... [and that] the apparent independence of positive and negative affect is shown to be largely an artifact of the methodology used in empirical investigations. When items are selected to be semantic bipolar opposites of affective experience, to represent the full domain of positive and negative terms, to separate high and low levels of activation inherent in the experience, strong negative correlations between positive and negative affect are obtained. (p. 30)

This information clarifies the way in which one may interpret such findings using similar measures.

Many studies using TRA/TPB, including key studies investigating alcohol use among college students (e.g., Johnston & White, 2003) or other related health behaviors (Godin & Kok, 1996; Terry & Hogg, 1996), have employed this affect-focused bipolar definition of attitude and its measurement. The current investigation has used this same definition and measurement tool (i.e., semantic differential), as distinguished from a cognition-based unipolar definition and measurement view (i.e., Likert scale) of personal attitude used to investigate social norms theory.

Alcohol use behavior. Ajzen (2002b) has suggested that including indicators of past behavior in a model using the theory of planned behavior may not be theoretically significant for a number of reasons, but that for practical reasons such as “inaccurate or unrealistic behavioral, normative and control beliefs; weak or unstable attitudes and intentions; and inadequate planning required for successful implementation of an intended behavior” (p. 120) may be a valuable addition to a study model. The variable represents alcohol use since starting college at Time Two through indicators of quantity and frequency.

Perceived behavioral control. Although the idea of perceived behavioral control (PBC) from the theory of planned behavior (Ajzen, 1985, 1991, 2001) has been represented as containing some element of self-efficacy (Bandura, 1997, 1998 in Rhodes and Courneya, 2003) and has been studied in that way to predict intention and behavior (Ajzen, 1985, 1991, 2001), Rhodes and Courneya determined that the PBC construct had two components, controllability and self-efficacy. Further, and most importantly, self-

efficacy, they found, loaded on both perceived behavioral control and on intention, creating measurement redundancy between those two constructs. Their confirmatory factor analysis using structural equation modeling indicated “the only model with acceptable fit across populations of undergraduate students and cancer survivors was that of controllability and intention” (p. 88), consistent with Ajzen’s (1985, 1991) idea of degree of “volitional” (Ajzen, 1985, p.25) control of a behavior. Their study-based recommendation was that “only controllability items such as ‘whether or not I perform behavior X is entirely up to me’” (Rhodes & Courneya, p. 89) and similarly stated items be employed to measure perceived behavioral control. Their operating definition of the controllability portion of PBC came from Ajzen (2002 in Rhodes & Courneya), defined as “personal control over a behavior, appraisal of whether a behavior is completely up to the actor” (Rhodes & Courneya, p. 80).

Intention. Fishbein and Ajzen (1975) defined intention as “a person’s subjective probability that he [or she] will perform some behavior” (p. 288). They contend that intentions have four dimensions: “the behavior, the target object at which the behavior is directed, the situation in which the behavior is to be performed, and the time at which the behavior is to perform” (p. 292). It is possible to specify intentions in both general ways (e.g., drink) or in very specific ways (e.g., to drink 5 drinks in a 24-hour period sometime in the next 2 weeks) (Fishbein & Ajzen).

Johnston and White (2003) used three items to determine the strength of “intention to binge-drink” (p. 68) over a future two week period. They used 7-point Likert scales using extremely likely/extremely unlikely, do intend/do not intend, and definitely intend to/definitely intend not to as the anchors. Their measures correlated .69

($p < .001$) with their single-item behavioral outcome measure. For the Time Two measure of intention similarly developed items were used.

Alcohol use behavior. As highlighted previously at the start of this chapter, behavior at Time Three was measured as it was at Time Two using indicators of quantity and frequency of consumption consistent with related research.

Toward A Fuller Understanding of the Peer Context of Alcohol Use

Among College Students: Integrating and Extending Theoretical Perspectives

Previous research has examined the peer context of alcohol use among college students using social norms theory (Perkins & Berkowitz, 1986), and the theory of planned behavior (Ajzen, 1985, 1991). The study model included these perspectives as well as two others. Social identity theory (Turner, 1982) and self-categorization theory (Turner, 1985) have been linked to Ajzen's (1985, 1991) theory of planned behavior to examine alcohol use among college students (e.g., Johnston & White, 2003) but not frequently applied. Status characteristics (Berger et al., 1966) and status construction theory (Ridgeway, 1991; Ridgeway & Balkwell, 1997) have been linked through previous research to alcohol use among college students (i.e., Snyder, 2001; Snyder and Sedlacek, 2003). Ridgeway et al. (1998) have noted key differences in social identity theory and status construction theory, particularly an out-group favoritism exhibited when status mechanisms are in place, and a strong in-group favoritism highlighted through social identity and self-categorization mechanisms. Social identity and self-categorization theories have been linked with status theories in studies as well (e.g., Oldmeadow et al., 2003). Social identity/self-categorization theories, status

characteristics theory, and status construction theory were also used in determining constructs for the model.

The following sections outline each theoretical family, social identity/self-categorization (Turner, 1982, 1985) and the two status-related theories (Berger et al., 1966; Ridgeway, 1991; Ridgeway & Balkwell, 1997). Within each theoretical frame, related research is identified. After the newly introduced theories and research are examined, the model is introduced as a way to examine the peer influence process context related to alcohol use among college students. Constructs related to these two theoretical perspectives are defined following the research foundation for the theoretical development.

Social Identity Theory and Self-Categorization Theory: A Two-Theory Family

Social identity theory (Turner, 1982) and self-categorization theory (Turner, 1985) have emerged over the last several decades to assist in distinguishing and explaining group formation, social identification, and social influence (Turner, 1999). They have derived from work by Tajfel et al. (1971) focused on social categorization and inter-group relations. Social identity theory (Turner, 1982), in particular, has examined social identity from a macro-level view, examining group formation in a given context and resulting consequences for the in-group and its members (Tajfel, 1982; Turner, 1982). Self-categorization theory was developed to examine the process of group definition and the influence of group membership on members' behavior (Turner, 1985).

The development of psychological group membership through cognitive or perceptual processes (Turner, 1982) has been termed "self-categorization" (Turner, 1985). Self-categorization theory reflects the micro-level theoretical representation of self in

relation to a particular group or category of individuals (Turner, 1985). It differs from earlier macro-level work by Tajfel et al. (1971) examining the processes of *social* categorization of one's self with one group rather than another (e.g., Tajfel, 1982) which served as a foundation for the development of both social identity theory (Turner, 1982) and self-categorization theory (Turner, 1985).

There has developed a strong empirical base in support of both social identity theory and self-categorization theory (Terry & Hogg, 2000; Turner, 1999). Although social identity theory and self-categorization theory are distinct and explain different phenomenon, the initial foundational research for each is shared (Turner, 1999). In particular, empirical study has pointed to the strength of a social identification view of group formation rather than a social cohesion view of it (Hogg & Turner, 1985; Turner, 1982), as described further in the next section.

Social Identity Theory Explained

Initial work on social identity and *social* categorization was used to examine intergroup relations, including how individuals try to achieve a positive social categorization through either social change within a group or individual social mobility (Tajfel, 1982). Later developments, and the perspective utilized in construct development for this study, developed social identity theory as a way to explain ingroup formation (Turner, 1982), a more micro-level view. From his work on social identity theory and previous work on social categorization theory (Tajfel et al. 1971; Tajfel & Turner, 1979), Turner (1985) proposed a theory of *self*-categorization to examine the process of individual social identification with a specific collection of individuals.

Social Identity Theory: Foundational Research, Method, and Key Findings

Early empirical study foundational to the development of social identity theory (Turner, 1982) and self-categorization theory (Turner, 1985) evolved from social identity and social categorization study (e.g., Tajfel et al., 1971; Tajfel & Turner, 1976). This research was experimental in nature and used a procedure eventually known as the Minimal Group paradigm (Doise, 1986, p. 19) from Tajfel (1978). These early studies sought to determine “the minimal conditions necessary for the appearance of a bias in favor of the membership group” (Doise, pp. 99-100). Several early studies (Tajfel et al., 1971; Tajfel, 1978; Dann & Doise, 1974; Billing & Tajfel, 1973; Turner, 1975) demonstrated that favoring one’s own group is found not only when subjects are divided with the purpose of interacting as separate groups, but also when they are divided simply for administrative purposes, with no interaction allowed. Doise commented, “simple evocation of group membership is therefore held to be sufficient to produce intergroup effects. . . ” (p. 101). In other words, when all else was held constant, placing subjects in groups created an environment in which they acted in favor of that arbitrary group.

According to Doise (1986) it is from this early work that Tajfel (1972, 1974, 1978, 1981) developed a theoretical perspective of *social* categorization, in other words, “comparisons between membership categories, and with that aspect of social identity which relates to individuals’ membership of social categories” (Doise, p. 103). Tajfel’s perspective was one that examined primarily inter-group behavior, including an individual’s need for positive evaluation of his or her group, comparison of membership groups, and consequences for group change or individual mobility (Doise, 1986; Tajfel, 1982). Although not overtly modeled in the present study, the potential for individual

mobility is demonstrated via a path from the social identity/self-categorization construct to the status-related one, as suggested by this earlier research.

Turner's (1982) elaboration of the social categorization and social identity research initiated by Tajfel and others (e.g., Tajfel et al., 1971; Tajfel & Turner, 1976) followed. Turner developed their work further, arguing that the applications could extend from explanation of intergroup relations to "explanation of *ingroup* formation" (Tajfel, 1982, p. 4). It is from this point in the chapter that the *self*-categorization theoretical perspective represented in the model is developed and explained.

Social Identity Theory: Developing a Cognitive View of Group Behavior

Initial formulations of a social cognitive view of social identity theory came from Turner (1982) and were at first known as the "Social Identification Model" (p. 15). The view represented by this model was that the development of psychological group membership came "primarily from a perceptual or cognitive basis" (Turner, 1982, p. 16). This view was contrasted with the view Turner called the "Social Cohesion Model" (p. 16) which traditionally represented a group as "two or more persons who are in some way socially or psychologically interdependent: for satisfaction of needs, attainment of goals or consensual validation of attitudes and values . . . [and posited that] group belongingness has an affective basis" (pp. 15-16). In other words the Social Cohesion view required mutual attraction for group formation, whereas Turner's Social Identification Model said that a cognitive process rather than an affective one created for an individual a sense of psychological membership, and thus a potential for social influence by the group to occur.

In short, Turner (1982) stated “the first question for determining group belongingness is not ‘Do I like these other individuals?’ but ‘Who am I?’” (p. 16). The theory posits that one can be attracted to a group of individuals as a group rather than to the individuals on an interpersonal basis, that one may or may not like the group members individually, but may be socially attracted to them. (See also Hogg & Hardie, 1992). Turner considered social cohesion an outcome of social identification, whereas the social cohesion view saw identification as an outcome of affective elements such as a sense of belonging.

Implications of Social Identity Theory

Social identity theory and related empirical studies (e.g., Tajfel et al., 1971) have demonstrated that social attraction is not necessary for group cohesion, social identification, or social influence (Turner, 1982). Further, related studies have demonstrated that the cognitive perceptual process of placing one’s self in social categories is sufficient for psychological group formation (Turner, 1982). That social influence can occur outside of social attraction, and that the process of placing one’s self in social categories is a cognitive process internal to the individual allows examination of these concepts through survey data. The concepts imply that influence can occur simply as a matter of cognitive psychological mechanisms rather than through any intentional influence by group members.

The social psychological process of self-categorization has been studied and theorized in tandem with social identity theory, together referred to as the social identity approach (Abrams & Hogg, 1990). Turner (1985) developed a theory of self-categorization, one that explained group development and related behavior from an

individual cognitive or perceptual perspective. The theories permitted researchers to understand differently, and some would argue more accurately (Turner, 1982), the relationships between groups, the development of groups and the consequences of group formation for the individual. Social identity theory and self-categorization theory support the hypothesized relationships in the model for the current study as well as development of specific measures and a construct representing social identity and self-categorization. Self-categorization theory (Turner, 1985) is discussed specifically in the following sections.

Self-Categorization Theory Explained

Turner (1985) introduced self-categorization theory as a way to examine both the process of how social groups form and how shared group membership influences the behavior of group members. (See also Turner et al., 1987.) The theory examines “the antecedents, nature, and consequences of psychological group formation” (Turner, p. 78). It hypothesizes that “group behavior reflects the depersonalization of the self produced by the salience of ingroup—outgroup categorizations in self-perception” (Turner, p. 77). It posits that group influence occurs when one defines one’s self as a member of a particular in-group. It further posits that the process of self-definition, namely self-categorization, results in a state of depersonalization of self such that, at its maximum point, any given member, including the self, may be seen as similar to any other member (Turner). According to self-categorization theory, it is through this process that the group may have social influence on the individual; one’s degree of identification with a cognitive or perceived psychological group is sufficient to influence one’s behavior (Turner).

Turner (1985) notes “the central hypothesis of the theory is that group behavior reflects the depersonalization [i.e., stereotyping] of the self produced by the salience of ingroup-outgroup categorizations in self-perception” (p. 77). The more one sees the self as interchangeable with other group members, as opposed to a “uniquely differentiated person” (p. 101), the more one’s social identity becomes activated. The more one’s social identity becomes activated, the more a person may be open to the influence of the group through these processes once the salience of the ingroup-outgroup categorization is activated. Salience in any given situation is a function of accessibility and fit for the perceiver (Turner). Accessibility is based on “past learning of what tends to go with what in the environment, ...and the person’s current search requirements, imposed by needs, goals, values, ongoing activities, and task orientations, etc.” (p. 102). Turner uses Oakes’ (1983) definition of fit as “the degree of correlation between social behavior and group membership in a normatively consistent direction” (Turner, p. 103).

The Development of Self-Categorization Theory

Turner (1985) presented a self-categorization theory derived from social categorization (Tajfel, 1982) and social identity (Turner, 1982) theories. (See also Turner, Hogg, Oakes, Reicher & Wetherell, 1987.) Unlike social categorization theory which was applied at a macro-level to examine intergroup behavior, social cooperation, and social influence (Turner, 1985), self-categorization theory was developed to examine at a micro-level the development, character, and consequences of individual social groups, in other words intragroup rather than intergroup phenomena. More specifically, Turner (1985) described self-categorization as a theory of group development and behavior

related to psychological processes within the cognitive or perceptual structures of the individual members.

Implications of Self-Categorization Theory

Self-categorization is particularly important to the study of social influence. It explains psychological group formation through cognitive processes within individuals (Turner, 1985). Further, it explains how reference group influence occurs for individuals and in this theoretical tradition is developed more specifically as “referent informational influence” (Turner, 1985, p. 113). Turner (1982) integrated several social influence concepts to create an amalgamated one. According to Turner (1982) his view of social influence, “referent informational influence” (p. 31) included aspects of *informational influence* (Deutsch and Gerrard, 1955), Kelman’s (1961) process of *identification*, and French and Raven’s (1959) idea of *referent power*. (See Turner, 1982, pp. 31-32 for a more complete explanation and description of “Referent Informational Influence II” and how it contrasts with normative influence and informational influence.)

For a study such as the present one of alcohol use among college students, self-categorization theory assists in explaining how the role of the reference group is brought to the forefront and activated for an individual as it is understood through measures of conformity, prototypicality and similarity (Turner, 1985). Additionally, self-categorization processes help explain the resolution of ambiguous or uncertain situations by prescribing group norms for attitudes and behaviors (Kalkhoff & Barnum, 2000; Turner).

Overview of Key Studies Using the Two-Theory Family

Social identity theory and self-categorization theory have a strong history of empirical evidence to support their development (Doise, 1986; Ellemers, Spears, & Doosje, 1999; Kalkhoff & Barnum, 2000; Oakes, Haslam, & Turner, 1994; Oldmeadow et al., 2003; Tajfel, 1982; Tajfel & Turner, 1979; Terry & Hogg, 2000; Turner, 1982, 1985, 1991, 1999; Turner et al., 1987; Worchel, Morales, Paez, Deschamps, 1998.) The base of development for the theories has been primarily from a European social psychology tradition with work emanating largely from Europe and Australia, although that has changed in more recent years. The June 2003 Special Issue of *Social Psychology Quarterly*, a primary publication of the American Sociological Association, focused on integrating sociological and social psychological perspectives of social identity (e.g., Hogg & Ridgeway, 2003). It is a clear example of integration and acceptance of the European social identity research within the United States, the broader cultural context for this study of the self-other influence processes of college student drinking. The theories have been applied to a wide range of social influence studies, including some focused on general health behaviors (e.g., Godin & Kok, 1996; Terry & Hogg, 1996) and alcohol use among college students (e.g., Johnston & White, 2003).

The Theories Applied to Health Behaviors

Terry and Hogg (1996) used a social identity view, reflected in social identity theory and self-categorization theory, to examine the role of norms in predicting attitudes and behaviors. They incorporated this social identity perspective with constructs from the theory of reasoned action (Fishbein & Ajzen, 1975) and the theory of planned behavior (Ajzen, 1985, 1991) such as intention, attitude and perceived behavioral control.

Terry and Hogg conducted two studies, the first with 105 male and female (54%) university students and the second with 81 university women. The first study examined subjects' intention to engage in regular exercise, and the second investigated women's intention to engage in sun-protective behavior such as wearing a hat or using sunscreen.

In the intention to exercise study, perceived group norm of a behaviorally relevant reference group, "friends and peers at the University" (Terry & Hogg, 1996, p. 789) was the predictor of intentions. Findings indicated that the effect of perceived group norms was conditioned by a participant's level of identification with the group. For subjects who identified strongly with the group, the perceived norm was a significant predictor of intention. However, for persons who were low in their group identification, perceived behavioral control was a stronger predictor of their intention.

Similar to findings in study one, in the study of women's intention to engage in sun-protective behavior, group norm was predictive of intention for subjects who identified highly with the group. Personal attitude predicted intention more for low group identifiers than for high. Normative perception was predictive of personal attitude for high identifiers.

Findings of both studies (Terry & Hogg, 1996) suggested that level of group identification, an element of one's process of self-categorization, can play an important role in predicting health related behavioral intention among college students. Authors suggested future research should include a wider range of populations and behaviors, use larger sample sizes to allow more complex statistical analyses, and should generally provide "stronger tests of the social identity and self-categorization perspective" (p. 791). Further, Terry and Hogg argued for a "reconceptualization of the role of social influence

along the lines suggested by social identity and self-categorization theories . . . [to provide] insight into the process by which norms influence behavioral decision making” (p. 791).

The Theories Applied to Alcohol Use Among College Students

Building on the work of Terry and Hogg (1996) in examining group identification and its relationship to attitude, intention, and perceived behavioral control, Johnston and White (2003) applied the social identity/self-categorization perspective to a study of high risk or “binge-drinking” (p. 63), as they called it, among college students. They chose this study to test the theories in part because it provided an example of peer-influenced decision-making. Although their study did not differentiate among groups of students, their decision to use identity groupings was based on the view that “students’ decisions to engage in binge-drinking occur regularly in the context of their identity as a university student, with behavioral decisions often strongly tied to their membership of a student group” (p. 67).

Specifically, the Johnston and White (2003) investigation examined the role of group norm using the social identity/self-categorization perspective and the theory of planned behavior, as did Terry and Hogg (1996). They wanted to explain more fully the social influence role of norms on behavior. The prospective study included two data collection points, with behavior being measured at a point in time after the predictor variables. The sample was comprised of seventy-seven percent (77%) ($N=223$) of 289 first-year undergraduate students initially surveyed from introductory psychology classes at a large Australian university.

The study found that norms of a behaviorally relevant reference group predicted intention to binge-drink, particularly for students who highly identified with the reference group. The behaviorally relevant reference group was operationized as it was in Terry and Hogg (1996), as “friends and peers at the University” (Johnston & White, 2003, p. 69). Johnston and White suggested future research studies should extend the use of social identity/self-categorization to include other dimensions of the theories “such as the salience of the in-group in the context that decisions are made, and the prototypicality of the in-group norms for the population under investigation” (p. 75).

Links to Social Norms Theory

To the knowledge of this investigator, there have been no studies linking a social identity perspective with social norms theory at the time of this study. However, there are implied links and related questions that make developing a study including them both seem logical and relevant.

For instance, Perkins and Berkowitz (1986) found, as have investigators since their initial study (e.g., Haines & Spear, 1996) that students tend to perceive alcohol-related norms as more liberal the further in proximity is a group for whom they are estimating norms. As an example, the tendency is for an individual to view his or her own alcohol-related attitudes or behaviors as most conservative, those of a friendship group as somewhat more liberal than their own, and those of the general student body as most liberal in this comparison (e.g., Perkins, 1997).

Even though some researchers have attributed this perceptual difference to the intimacy of knowledge one has about attitudes and behaviors (e.g., Perkins & Berkowitz, 1986; Perkins, 1997), there are other plausible explanations possible through a social

identity/self-categorization lens that need to be examined. It is possible through self-categorization theory to explain that an individual identifying to one degree or another with a friendship group may see himself or herself as more *prototypical* of that group than of the student body as a whole, and thus more similar in behavior through the social influence of that friendship group as an ingroup or reference group. Also plausible is a more macro-level social identity view that the individual perceives his or her more central *social* categorization (Tajfel, 1982) to be friend rather than student at the university. This explanation would suggest there may be circumstances in which the more central social categorization is student at the university, or perhaps first-year student, rather than member of a friendship group. These explanations are considered through the hypothesized relationships among model variables in this study, as well as in the chosen measures.

As Turner (1982) and others (e.g., Johnston & White, 2003; Terry & Hogg, 1996) have noted, the social identity perspective, particularly self-categorization theory, assists in bringing to the forefront the reference group to explain how it is activated through the process of self-categorization to influence individual behavior. This examination of the dynamic relationship between the reference group (in-group), and the individual through the process of self-categorization thus offers a way to elaborate the explanatory power of social norms theory regarding normative influence on behavior.

Indeed, social norms theory (Perkins & Berkowitz, 1986) posits that social norm (normative influence) and personal attitude (informational influence) each have a role in determining individual behavior. Turner (1982), however, contends that the two influence processes—normative and informational—represented in traditional views of

social influence are actually one form of influence reflected through self-categorization theory. Via self-categorization theory, the normative and informational influence is a process of conforming to in-group norms (Schofield, Pattison, Hill, & Borland, 2001).

White, Hogg, and Terry (2002) conducted a study integrating social identity/self-categorization perspectives (e.g., Turner, 1982, 1985; Turner et al., 1987) with that of the theories of reasoned action/planned behavior (Fishbein & Ajzen, 1975; Ajzen, 1985, 1991, 2001). The purpose of the study, a series of two experiments with male and female college students as participants (Exp. 1, $N=160$; exp. 2, $N=180$), was to try and improve the prediction of behavior from attitude through exposure to norm from a relevant reference group. Their findings supported the idea that this exposure could augment the consistency found between attitude and behavior when norm of the group was basically consistent with an individual's attitude.

This finding is similar to the assumption of social norms theory (Perkins & Berkowitz, 1986), which suggests that norm influence behavior through attitude and that norm of a reference group can promote this influence. A weakness of SNT, however, has been in defining what a reference group is, in other words, what reference group to focus upon and for whom (Campo et al., 2003; Keeling, 1999, 2000); much research related to SNT has focused on the larger student population using matched samples across time (e.g., Haines & Spear, 1996), assuming a singular superordinate reference group for all students on a campus.

Thus there are questions about the relationships of the social norms theory and social identity/self-categorization theories that need to be examined simultaneously in context in order to begin to understand better the roles they may serve in explaining

social influence on behavior, and in this study in particular, in explaining the self-peer influence processes context for alcohol use by students.

Links to the Theory of Planned Behavior

A number of studies (e.g., Johnston & White, 2003; Ravis & Sheeran, 2003; Terry & Hogg, 1996; Terry, Hogg, & White, 1999; White, Hogg, & Terry, 2002) have examined the theory of planned behavior (Ajzen, 1985, 1991) in light of potential contributions offered from social identity theory (Turner, 1982) or self-categorization theory (Turner, 1985). The three cited here and published subsequent to Terry and Hogg each built on the TPB and social identity/self-categorization examinations in their study.

As noted previously, Terry and Hogg (1996) looked at how identification with a behaviorally relevant reference group, “friends and peers at the university” (p. 781) could add to the prediction of behavior by attitude and norm within a context of the theory of planned behavior. Study findings suggested that prediction of behavior from attitude was stronger for low group identifiers and prediction of behavior from norm was stronger for high group identifiers.

Following the Terry and Hogg (1996) studies, Terry, Hogg, and White (1999) also conducted a study using both the theory of planned behavior (Ajzen, 1985, 1991) and self-categorization theory (Turner, 1985). Their study used self-report survey responses of a convenience sample of community residents ($N=143$) to examine recycling behaviors in a community where a recycling program existed. The survey at Time One included predictors from the theory of planned behavior and self-categorization theory, intention and other predictors of behavior at Time Two.

Findings from their study were similar to those of Terry and Hogg (1996) for relationships of constructs from TPB and self-categorization. Terry et al. (1999) found that “for people who identified strongly with the reference group, intention to perform the behavior was influenced by the group norms” (p. 238). Also similar to findings of Terry and Hogg was the finding that for participants who expressed low identification with the reference group, perceived behavioral control, drawn from TPB and a personal rather than social variable (Terry et al. 1999), was more predictive of intention than was group norm. These findings were predicted by the theories under examination. Additionally, this study found evidence to support “the contention [made by Bagozzi (1991) and Triandis (1979)] that the impact of cognitive determinants [such as attitude] on intention lessens as a function of past experience of performing the behavior” (p. 241).

Overall, findings added to the idea that from a self-categorization perspective, “aspects of personal identity [such as perceived behavioral control and attitude] should be responsive to variation in strength of group identification” (Terry et al., 2000, p. 240) and that a social identity view can augment predictions possible with the theory of planned behavior.

Two additional studies (Rivis & Sheeran, 2003; White et al., 2002) have also provided support for the value of integrating constructs from social identity/self-categorization theories (Turner, 1982, 1985) to those of the theory of planned behavior. White et al. used an experimental design ($N=160$) to examine the relationship of group norms in assisting prediction of behavior from attitude. They found that participants’ attitudes and behaviors were more consistent when they received normative support from a relevant reference group, their ingroup rather than an outgroup. In a prospective study

using survey data, Ravis and Sheeran investigated the ability of the measures of prototype based on self-categorization theory and measures of descriptive norm to predict the exercise intention and behavior of young adults after controlling for the predictive ability of attitude, subjective norm, and perceived behavioral control from the theory of planned behavior. Findings supported “utility of the theory of planned behavior, descriptive norm, prototype similarity and past behavior in predicting intention and behavior” (Ravis & Sheeran, p. 567).

As outlined previously, Johnston and White (2003) used social identity/self-categorization theories (Turner, 1982, 1985) to look at the role of group norms and group identification in predicting high-risk use of alcohol by college students. Their study integrated the constructs from the theory of planned behavior with key variables from self-categorization and social identity theories in order to predict intention and behavior. Findings demonstrated the utility of integrating the theory of planned behavior with social identity perspectives to aid in behavioral prediction (Johnston & White, 2003).

Findings Specific to Subgroups Under Investigation

Using structural equation modeling multigroup analysis techniques, the current study examined the model by racial-ethnic group and by gender where sample size permitted. Even though a number of studies investigating self-categorization and social identity theories and related applications have used either first-year college students (Johnston & White, 2003) or college students generally (Ravis & Sheeran, 2003; Terry & Hogg, 1996; White, Hogg, and Terry, 2002), few studies have examined the role of gender (Hogg & Hardie, 1992; Terry & Hogg, 1996). Terry and Hogg applied self-categorization theory to the demonstration of sun-protective behavior among women and

found that the theory performed as expected; identification with the group aided predictions.

Hogg and Hardie (1992) conducted an experimental study using four-person single-sex groups to examine the role of group salience on behavioral conformity. High salience conditions activated a social identity, and low salience conditions activated a personal identity, with the hypothesis that behavior would be more depersonalized (e.g., converge on the group norm) under the high salience condition. The theory performed as expected for both genders in that “greater conformity was associated with the predicted depersonalized [e.g., stereotyping of self and others to conform more with a view of the prototypical group member] intragroup attraction phenomena” (p. 53).

On the other hand, although for women high salience conditions predicted a stronger convergence, similarity, and prototypicality, for men this was not the case. For men, this stronger convergence, similarity and prototypicality occurred in the low salience conditions. Hogg and Hardie (1992) explained that for men in the low salience conditions, perhaps the simplest explanation of the gender effect was the very high initial subjective uncertainty (e.g., personally perceived uncertainty of behavioral choices). They contended that this very high uncertainty in the low salience condition “may have overwhelmed the experimental attempt to encourage independence” (p. 51). Additionally, they indicated that there may have been a sampling effect. Questions about the role of self-categorization theory in explaining variance by gender still remain, but the theory is considered applicable to both genders (Hogg & Hardie).

To date, it appears that no studies using the theory of planned behavior and the social identity/self-categorization theories have specifically investigated effects by race

or ethnicity. Johnston and White (2003) did examine the theoretical contributions of social identity/self-categorization (Turner, 1982, 1985) to understanding high-risk alcohol consumption (e.g., “binge-drinking” p. 63). They found that two variables from social identity/self-categorization as predictors of high-risk drinking behavior, namely group norm and group identification, in addition to others offered from the theory of planned behavior, explained significant variance in consumption patterns. They offered that future research should include other aspects of self-categorization theory, including salience of the ingroup in the context of the behavior and measures of prototypicality.

Critique, Unanswered Questions, and Rationale for This Investigation

As discussed previously, in a college environment, students’ peers are exceptionally important in their cognitive and affective development (Astin, 1996). However, a weakness in studies of peer influence has been one of defining who those peers may be (Snyder, 2002). A common practice in studies of college students and peer influence has been to use investigator-imposed reference groups such as student residence, student organization, classroom, race, or gender (e.g., Pascarella & Terenzini, 1991). However, these proxies are unlikely to be able to detect or explain peer influence in the ways that social identity theory and self-categorization theory may since the theories posit processes that originate as cognitive processes within the individual and can result in measurable outcomes such as behavior (e.g., Johnston & White, 2003; Terry & Hogg, 1996), resolution of uncertainty (Hogg & Hardie, 1992) or potentially social mobility (Tajfel, 1982). Through these social identity/self-categorization theories, the individual student rather than the investigator may define more clearly reference groups

and their importance, hopefully providing greater definition of influence strength, direction, and source not available through the oft-used more distal proxies.

Construct Offered by Social Identity and Self-Categorization Theories to the Model:

Social Identity/Self-Categorization

Social identity theory and self-categorization theory offer a view to understanding social influence within groups from an individual perspective (e.g., Johnston & White, 2003; Terry & Hogg, 1996; Turner, 1999; White, Hogg, & Terry, 2002). Peers are said to have the greatest single influence on a student's cognitive and social development (Astin, 1996). In studies of alcohol use using the lens of social norms theory, students perceive their friends' alcohol use to be more highly correlated with their own use than they do that of the general student body on their campus (Haines & Spear, 1996; Perkins & Berkowitz, 1986; Snyder & Sedlacek, 2001, 2002). In other words, students perceive a greater similarity in their own and their immediate friends' alcohol use than in their own and that of the general student body, tending to perceive their own use and that of their friends to be less than that of the general student body on campus. This finding may reflect a self-categorization process, although it is not stated as such in current literature.

The importance of a student's closest peers, the friendship group, is posited through self-categorization theory (e.g., Johnston & White, 2003), social norms research regarding alcohol use among students (e.g., Perkins & Berkowitz, 1986), and the work of Astin (1996) and others (Pascarella & Terenzini, 1991) to be influential for college students in terms of social comparison, behavioral consequences, and social influence within the group.

The degree to which a particular student is open to social identity/self-categorization influences from their friendship group, other first-year students, and other students at the University is illustrated via the processes represented in self-categorization theory and in the variable social identity/self-categorization.

Integrating Status Characteristics and Status Construction Theories to the Model

A final theoretical perspective for the model is introduced here. The following sections are devoted to explaining the role of status in social contexts and how status may assist in explaining peer influence on one's alcohol consumption choices. First, the explanation of the concept of status and the development of status characteristics theory (Berger et al., 1966) and status construction theory (Ridgeway, 1991; Ridgeway and Balkwell, 1997) are highlighted. Examination of reference to status and alcohol in the literature is then made, and limited empirical evidence suggesting a link between status and alcohol on campus is highlighted. Next links from status-related theories to social norms theory, the theory of planned behavior, and social identity/self-categorization theories are made. The final segment provides an overview of unanswered questions and a rationale for incorporating a status perspective into the model to aid in the study of the peer influence context of alcohol use among college students.

What Is Status and Why Is It Important?

Status refers to both a value regarding attributes or resources (and who has those that are most valued) and a structure (high or low), and the idea of status also relates to the way in which a person treats others according to his or her status expectations of them (Ridgeway & Walker, 1995). The concept of status is important to understand for a number of reasons. For instance, when race or gender is acted upon as a status

characteristic, it can influence decision-making, participation, and power in a group, not based on actual competence or ability, but based on beliefs that may be entirely unrelated to ability or competence (Berger & Zelditch, 1985; Cohen & Roper, 1985). As sociologists Harrington and Fine (2000) point out, “these [status] expectations create self-fulfilling prophecies in which individuals are assumed to have abilities [or other resources] consistent with their status . . .” (p. 318). Further, Ridgeway et al. (1998) have argued that one’s status relates to a range of status-related resources such as power, prestige and being esteemed by others, that those resources are distributed unevenly across the population, and that those resources are in some way valued. On a college campus, then, resources might imply things like social opportunities, admiration from peers, and influence over others.

Status Characteristics Theory Explained

Status characteristics theory (Berger et al., 1966; Berger, Cohen, & Zelditch, 1973; Berger, Conner, & Fisek, 1974) grew out of expectation states theory (Berger et al.), one of the strongest and most active research programs in sociology throughout the last 35 years (Balkwell, Berger, Webster, Nelson-Kilger, & Cashen, 1992). Expectation states theory argues, essentially, that actors—people—engage with one another based on conscious and unconscious expectations that they have developed of one another or of themselves and how their interaction will thus be influenced (Berger & Zelditch, 1985). Although there has been research suggesting that status directly affects behavior, the research has been contested, with more consistent indications that status actually affects behavior indirectly through expectations, diagramed as: status → expectations → behavior (Driskall & Mullen, 1990). In the case of status, expectations are based on

anticipation of competence in a given context (Ridgeway, 2000). Further, as Berger, Wagner, and Zelditch (1985) have pointed out, “expectations states are not observable states . . . [and although] they are not directly measured . . . [they] are inferred” (p. 35). Expectations can be inferred from behavioral or informational antecedents such as social beliefs, behavioral consequences, or “theoretical specifications of the relations between these two kinds of known factors and unobservable expectation states” (p. 35).

Another important and closely related area of research is that of “status generalization, the process by which statuses of actors external to a particular interaction are imported and allowed to determine important features of that interaction” (Webster & Driskell, 1985). The process of status generalization (taken from Webster & Driskell, 1985, pp. 108-109):

- organizes interactions among people
- means people are culturally evaluated in positive and negative ways relative to each other
- involves processes of influence, deference, leadership, and others in which people may act as subordinate or superordinate
- activates status characteristics inside a group once members are brought in from outside, making the status characteristic relevant within the group
- means a status characteristic can influence the structure of interaction, even when the characteristic is irrelevant to the task at hand,
- is a process of which people are not always aware, and one which is “used by individuals to structure unfamiliar social situations” (p. 109).

Early Research, Method, and Findings

The foundational theoretical work related to expectations states theory and its “proliferants” (Berger et al., 1985, p. 11) such as status characteristics theory and status generalization theory were predominantly experimental in nature (e.g., Conner, 1965; McKeown, 1969; Foschi, 1968). This is true also for much of the research based on application of the theories to specific characteristics, such as sex (e.g., Meeker & Weitzel-O’Neill, 1985), race (e.g., Cohen & Roper, 1985), and ethnicity (e.g., Rosenholtz & Cohen, 1985).

Early experimental studies in developing expectation states theory related to status “sought to explain how and under what circumstances initial status differences determined the observable power and prestige order” (Berger et al., 1985, p. 12). Findings from these studies indicated that numerous characteristics operated to produce a power and prestige order, and such an effect occurred even when a given characteristic was not related to the task at hand (Berger et al.). Status characteristics theory, as initially developed by Berger et al. (1966) assumed that “expectation states both determine and are maintained by power-prestige behavior” (Berger et al., 1966, p. 12). The expectation state in status characteristics theory was related to “initial status differentiations” (p. 12) such as being male or female, White or Black, and were related to expectations of competence as well as other “social evaluations” such as honor and respect (p. 12). Experiments by Berger, Cohen and Zelditch (1972) and Moore (1968) also found that status characteristics “significantly ordered the subjects’ power and prestige” (Berger et al., 1985).

Implications of Status Characteristics Theory

Status characteristics theory provides an explanation of why and how patterns of interaction among people develop, who has power and prestige in a given context, and what the consequences of interaction in that context may be. The theory explains the development of expectations based on status characteristics, the contextual influence of status differences, and how a lower status person may experience status disadvantages or status disabilities (Cohen, 1982), and a higher status person may accumulate status advantage (Berger et al., 1985). Work in the expectation states and status characteristics research program paved the way for further study regarding status beliefs, including conditions sufficient for their development, how they function, and the contexts in which they operate. Status construction theory (Ridgeway, 1991, 2000; Ridgeway & Balkwell, 1997; Ridgeway et al., 1998) is one such avenue of further study.

Status Construction Theory (SCT): The Theory Explained

Senior sociologist Cecilia L. Ridgeway (1991, 2000) and colleagues (e.g., Ridgeway & Balkwell, 1997; Ridgeway et al., 1998) initiated a research branch of status characteristics theory focused on how status beliefs develop in a culture or population. The work she initiated in 1991 resulted in a theoretical frame later named “status construction theory” (Ridgeway & Balkwell, 1997, p. 14), which is essentially focused on what ingredients, even though not necessary, are “sufficient” (Ridgeway, 2000, p. 99) for development of status beliefs in a culture or population. Status construction theory (SCT) focuses on the ways in which status beliefs about a nominal characteristic such as gender or race become diffused throughout a situation or culture to have the appearance of “objective social reality” (Ridgeway, 2000, p. 87) thus lending “*social validity*”

(Ridgeway, 2000, p. 87) to that local situation. SCT has been supported through experimental study (e.g., Ridgeway & Erikson, 2000; Ridgeway et al., 1998) and computer-simulated modeling (e.g., Ridgeway & Balkwell, 1997), as well as by analyzing responses to semantic differentials administered post-experiment (Ridgeway et al.). The theory posits that a status mechanism is in operation when, regardless of their own high or low status, people agree that *most others* perceive persons with a given nominal characteristic or trait as holding greater power, respect, prestige, or competence (Ridgeway, 1991, 2000; Ridgeway & Balkwell, 1997).

Status Construction Theory: Status Beliefs and Theoretical Development

The following sections introduce status construction theory, including the concept of status beliefs, what they are, where they come from, and what some measurable indicators of them are. Implications of status construction theory and research using the theoretical perspective are then highlighted.

Status beliefs: What are they and why are they important? Ridgeway (1997) defined “status value beliefs ... [as] beliefs that attach differential social worthiness and competence to status (such as male and female) and of characteristics on which people are perceived to differ (such as sex)” (p. 138). Such status value beliefs are “roughly consensual across a population of actors” (p. 138) and this is primary in their development and impact. As beliefs that are perceived as shared by most others, they develop “social validity” (Ridgeway, 2000, p. 87) and thus require response from individuals (Ridgeway, 1997). Because of their consensual nature, status value beliefs can have a “powerful impact on the organization of social life” (Ridgeway, 2000, p. 138).

For Ridgeway (1997), key in understanding status value beliefs, or “status beliefs” (Ridgeway, 2000; Ridgeway and Erikson, 2000), and their consensual nature is their differentiation from the beliefs prompting the favoritism displayed toward one’s ingroup (one’s own group) as demonstrated through social identity theory (Tajfel, 1978, 1981; Turner, 1985; Abrams & Hogg, 1990; all in Ridgeway, 1997). Although social identity theory (Turner, 1982, 1985) explains the preference individuals show toward their own group, Ridgeway (1991, 1997, 2000) explains through status construction theory (Ridgeway, 1991; Ridgeway and Balkwell, 1997) the out-group favoritism that accompanies status beliefs when a status mechanism is in operation. When a status mechanism is in operation, low-status as well as high-status persons all favor the high-status group rather than each favoring or preferencing his or her ingroup for self-enhancement motives as in social identity theory (Ridgeway, 2000). In other words, this status mechanism is active when low status individuals concede, as part of the culturally based view in the population, that a particular out-group (with a particular characteristic) is more prestigious, competent or esteemed rather than showing the in-group favoritism predicted by social identity theory.

Key studies: How do status beliefs develop? Three key studies (Ridgeway, 1991; Ridgeway & Balkwell, 1997; Ridgeway & Erikson 2000) have demonstrated status construction theory, including how status beliefs develop and the elements sufficient for a status mechanism to operate. The first study connected a nominal characteristic to beliefs about the characteristic’s status value, resulting in an initial conceptualization of status construction theory (Ridgeway, 1991). In their 1997 study, Ridgeway and Balkwell

developed status construction theory further and explained the diffusion of status beliefs. Finally, Ridgeway and Erikson (2000) experimentally tested status construction theory.

The earliest of the three studies (Ridgeway, 1991) examined a fundamental question: “How do nominal characteristics of people such as gender or race acquire a status value in society once they are cognitively distinguished?” (p. 367). Ridgeway linked two established theories, Blau’s structuralist (1977) theory and expectation states theory (Berger et al., 1966). The study (Ridgeway) was an analysis and synthesis of structural constraints, interaction, and status beliefs based on other related empirical work. She looked at “macrostructural processes interacting with status processes at the microlevel in the development of macrolevel prestige or status dimensions” (p. 381).

Ridgeway’s (1991) analysis suggested that when actors differed in resources and characteristics, “consistent associations between nominal characteristic and status beliefs lead eventually to the creation of consensual beliefs about the characteristic’s value” (p. 381). She offered by way of example a view of the development of the status value of gender and highlighted the importance of discovering ways to overcome such nominally related consensual status beliefs.

Additionally, Ridgeway (1991) identified four specific structural conditions that allowed nominal characteristics such as gender to become “correlated with a difference in exchangeable resources [e.g. intelligence, power]” (p. 367). Essentially, these are 1) unequal distribution of valued resources, 2) socially meaningful distinction among those persons with varying levels of resources, 3) categorical divisions among population by a nominal characteristic (e.g., gender, race, [category of drinking behavior]), and 4)

correlations between a nominal characteristic and resource advantages or disadvantages (Ridgeway, 1991).

Although it was not an empirical study, “major points within it also rest on good empirical grounds and those that do not can be tested” (Ridgeway, 1991, p. 381). With this analysis Ridgeway synthesized much related work in the field and cleared a path for further micro-macro related theoretical development and empirical study, which would not otherwise occur. The theoretical view resulting from this work was later termed “status construction theory” (Ridgeway & Balkwell, 1997, p. 14).

Building on Ridgeway’s (1991) analysis, Ridgeway and Balkwell (1997) sought to answer a next logical question: “How are consensual beliefs about the status-value of individual characteristics created in a society?” (p. 14). They (Ridgeway & Balkwell, 1997) used “status construction theory” (p. 14) as developed in the Ridgeway (1991) analysis and then elaborated that work.

The authors (Ridgeway & Balkwell, 1997) described that status construction theory is grounded in expectation states theory. They elaborated “status construction theory asserts that if macro structural conditions show a correlation between an initially unevaluated nominal characteristic, the first will become evaluated, and group-based diffusion will aid significantly in making the status belief consensual in the society” (Ridgeway & Balkwell, p. 28). Ridgeway and Balkwell used computer simulations to “support the validity of this conclusion” (p. 28). They argued that the simulation model is useful because it “places such processes in a fuller social context [than can an experiment] which also includes the effects of group size and the direct, unmediated impact of macrostructural conditions” (Ridgeway & Balkwell, p. 29). The investigators

were able, for instance, to look at the efficiency of carriers of status beliefs in groups and the effects of group size on the spread of beliefs. The simulation supported the logic of the theory and also established that small group encounters (e.g., up to five or six people) are effective for belief acquisition. It also verified the importance of the type of encounter in spreading status beliefs (Ridgeway & Balkwell).

Ridgeway and Erikson (2000) employed status construction theory to examine whether “interaction spreads status beliefs through behavior, creating a diffusion process that makes widely shared beliefs possible” (p. 1). Two experiments they conducted supported the propositions of the theory. Again, SCT is derived in part from work in expectation states (Berger, Norman, Fisek, & Zelditch, 1977 in Ridgeway & Erikson).

The researchers (Ridgeway & Erikson, 2000) developed two experiments, each one a 2 x 2 x 2 factorial design, to examine status construction theory. The first experiment was to see if a person with a given status belief could “‘teach it’ to another just by treating the other according to the status belief” (Ridgeway & Erikson, p. 27). Same gender dyad teams were used (41 men and 48 women, with confederate partners) with different nominal characteristics but the same resources (assigned pay level) in deferential and nondeferential conditions. The second experiment was similar and intended to examine another question: “Can third party participants of goal-oriented encounters also be ‘taught’ status beliefs by repeatedly observing the enactment of an influence hierarchy between a person of their own nominal group and someone from another nominal group?” (Ridgeway & Erikson, p. 77). Findings for both experiments supported status construction theory that nominal characteristics can create status beliefs

through interaction and that the beliefs can be spread to bystanders (Ridgeway & Erikson).

Ridgeway (2000) identified that the ingredients sufficient to allow status beliefs to develop are “prestige, honor, or esteem” (p. 77) as well as competence and social worth (Ridgeway et al., 1998). Ridgeway (2000) noted that the “observable power and prestige behaviors” (p. 85.) form “status markers” (p. 85) representing “the differences in the social evaluation of actors in the situation” (Ridgeway & Berger, 1986 in Ridgeway, 2000, p. 85). Particularly significant to the current investigation, Ridgeway (2000) identified that it is possible for a person to demonstrate behaviors of power and prestige in order to gain influence or seem competent, especially, she argued, “among social peers” (p. 85).

Implications of Status Construction Theory

Together these studies are vitally important. The work of Ridgeway and her associates has linked micro and macro processes that might not have been accomplished in strict empirical studies rather than also through simulation, for instance. Because Ridgeway and associates were able to step back from an established pattern and look at the forest rather than simply the trees, they cleared a path for significant work with major practical and social implications.

Although non-experimental investigations of status have not been done to date except through computer modeling as exemplified above, the concept lends itself to a different research paradigm following the work of Ridgeway (1991, 2000) and colleagues (e.g., Ridgeway & Balkwell, 1997; Ridgeway et al., 1998; Ridgeway & Erikson, 2000). Jasso (2001) adds that avenues have opened for future survey use in studying status, in

part through the work (e.g., Ridgeway, 1991, 2000; Ridgeway & Balkwell, 1997; Ridgeway et al., 1998; Ridgeway & Erikson, 2000) that has identified key indicators of a status mechanism in operation (e.g., prestige, honor, esteem, competence, and social worth).

The strength of status construction theory and its associated empirical evaluation suggests that it is possible to examine such indicators (e.g., prestige, competence, and esteem), more proximal and diverse than status, to help clarify the context of alcohol use on campus. According to SCT, should a status characteristic exist regarding alcohol use among students, it would thus influence the pattern of status beliefs and also structure the interactions among students, correlating one's perceived social worth or prestige with drinking patterns.

General Research Using the Two-Theory Family

Since the development of status construction theory (Ridgeway, 1991; Ridgeway & Balkwell, 1997), it has been applied readily in a number of studies, including studies linking it with other theoretical views (e.g., Barnum & Kalkhoff, 2000; Oldmeadow et al., 2003).

Status and Alcohol Use Among College Students: Theoretical and Anecdotal Perspectives

Sections following describe the evolution of thinking by this investigator regarding status as a theoretical concept and its relationship to alcohol use among students. First, anecdotal representations of status and students are noted, as are two peripherally related empirical studies. Next, a study preliminary to the current one (Snyder & Sedlacek, 2003) and on the same study campus is described, as are its findings regarding the relationship of alcohol-related status beliefs, normative perception, and

attitude among college students. Following that, links to social norms theory and social identity/self-categorization theories are discussed, as are subgroups under investigation here, rationale for using this theoretical perspective, and the construct offered by status construction theory to the study.

Hints of status in the college student literature. The concept of status is not defined or addressed systematically in the research literature on alcohol or on college students even though, as noted previously, the April 2002 NIAAA report identified “students’ expectation that alcohol is a necessary ingredient for social success” (p. 1). The historical bases for including status constructs in the present study are illustrated here and include work by sociologist Newcomb and colleagues (1966) that acknowledged status seeking among college students. Even though Perkins (1997) in his work on social norms theory cited Newcomb (1966) when discussing attribution theory and reference groups as explanations of social influence, he did not acknowledge the idea of status. Newcomb and Wilson (1966) in *College Peer Groups*, however, do allude to a connection between alcohol use and social status, as does Hansen (1997), whose work will be discussed more later.

In this early volume on college peers (Newcomb & Wilson, 1966), published about the same time as initial studies on expectation states and status characteristics theory (Berger et al., 1966), sociologist Theodore Newcomb (1966) tied the power of groups to the ability to offer or withhold social status (p. 4). Related chapters in the same volume explore the importance of “status systems” (Coleman, 1966, p. 255) in college environments and identify drinking as a possible means of achieving status on campus (LeVine, 1966). Although contributors to this volume created a case for examining status

systems on college campuses, the concept of status appears not to have been explored systematically in related literature, perhaps because most literature on college students and on alcohol use stems from a psychological base rather than a sociological one, and perhaps because status characteristics theory was developed largely after this volume emerged.

More recent suggestions of connection: Alcohol and status among college men. A literature search revealed one empirical study (experimental) relating model (confederate in the study) status, social interaction, and drinking behavior by college-aged men (Collins, Parks, & Marlatt, 1985). The authors, well recognized in alcohol studies research, provided models of drinking behavior varied by social status and type of interaction (warm or cool). Social status was defined in high, peer, or low conditions, and status conditions were manipulated using “age, socioeconomic background, education and appearance” (p. 195) as indicators of high, low, or peer (equal) status relative to experiment subjects. Researchers found no significant relationship between status—as they defined it—and drinking behavior.

However, citing a study (Caudill & Lipscomb, 1980 in Collins et al., 1985) examining the drinking behavior of alcoholics in particular, Collins et al. noted that when peer (equal) status was defined by Caudill and Lipscomb in terms of drinking behavior rather than demographic factors such as those used in the Collins et al. study, it was found significantly related to drinking behavior” (Collins et al, 1985, p. 199). This finding suggests that perhaps a status mechanism was in operation regarding drinking behavior, with subjects (alcoholics) in the Caudill and Lipscomb study attributing different levels of status to different categories of drinkers.

Collins et al. (1985) concluded: “*Definition of status based on drinking-related criteria (abstainer, moderate drinker, or heavy drinker) may be more salient in drinking situations than may a definition based on demographic characteristics. A future study involving use of drinking status as a factor determining the modeling of alcohol consumption seems warranted [italics added]*” (p. 199). One might argue that although the current investigation was not one of modeling behavior, per se, it was a study of the social salience of drinking using status value (derived from associated status beliefs) and a possible influence on other drinking-related measures.

Limited suggestion of status in alcohol-related literature. A review of about 90 citations from the *Social Sciences Citation Index* of the Collins et al. (1985) article discussed earlier revealed no additional studies focused on status and alcohol.

There was one essay unrelated to the Collins et al. (1985) study, however, from *Bringing Theory into Practice* (1997) in which psychologist and alcohol/other drug prevention researcher William B. Hansen focused on social ecology, alcohol, and college student drinking. In the chapter, he referred anecdotally and in essay analysis to drinking and alcohol use as a possible mechanism for achieving status on campus and among peers (1997). Other authors who have addressed alcohol issues and/or adolescents have occasionally mentioned status in a passing way, including Ridgeway and Erikson (2000) who referenced “the teenager seeking respect on the streets” (p. 1) as an example of status seeking.

A pattern suggestive of potential status considerations was found in two additional studies. Using data gathered by random sampling within 61 colleges and universities ($N=25,411$) employing the *1994 Core Alcohol and Drug Survey—Long*

Form, Cashin, Presley, and Meilman (1998) examined alcohol consumption, alcohol-related consequences and alcohol-related beliefs and their associations with level of involvement in fraternity and sorority life (i.e., not involved, attended, actively involved, leader, attended and leader). Analysis examined gender effects as well. Contrary to investigator expectation that leaders would demonstrate lower levels of consumption, they suggested perhaps related in part to liability and risk management and role modeling, the investigators found that overall, for both men and women, “higher levels of involvement in Greek life, and particularly leadership roles, are associated with greater amounts of alcohol consumption, heavy drinking and adverse consequences” (p. 69). They concluded “the leaders are participating in setting norms of heavy drinking and loss of control” (p. 69). Thus, fraternity and sorority leaders, demonstrating higher rates of high-risk drinking and frequently viewed as higher in status than other students, possibly links alcohol use and status because of the social prestige attributed to student leaders. Whether their higher-risk drinking or their leadership roles were in place first, although unknown, could give some indication of potential status mechanism operating.

Beliefs expressed by students in the study (Cashin et al., 1998) suggested they saw alcohol as a “vehicle for friendship, social activity, and sexual opportunity” (p. 69). One might argue that these beliefs are related to heightened access to “exchangeable resources” held by higher status persons, as investigated by Ridgeway (1991, p. 371), and in the current study hypothesized as drinkers, or students who drink alcohol socially at least sometimes. This explanation suggests the need to explore the possibility that a status mechanism may be in operation surrounding alcohol and social status on college campuses.

A second study (Berkowitz & Perkins, 1986) examined student leaders compared to other students in their alcohol-related attitudes, normative perceptions, behavior and consequences of use. Using 1982 survey data solicited from the entire student body at a small liberal arts college ($N=1,514$, 86% response rate), investigators compared resident advisers (RAs), formal leaders in the residence halls, to their non-RA peers on alcohol-related measures. Similar to Cashin et al. (1985), Berkowitz and Perkins (1986) expected RAs as student leaders to exhibit more conservative drinking behavior and possibly fewer negative consequences than other students. Findings from the Berkowitz and Perkins study indicated that RAs experienced negative consequences similar to other students; that they used alcohol in ways similar to the campus norm; but that they “were less likely to drink in great excess or to abstain from drinking” (p. 152). The study also found that RAs were not significantly different than their non-RA peers in that they perceived drinking norms on campus to be more liberal than they actually were. Further, authors suggested that by way of their formal and public leadership roles, RAs might perpetuate the inaccurate perceptions, thus influencing student behavior (e.g., Perkins & Berkowitz, 1986). Later Perkins (1997) elaborated in a theoretical essay that such student leaders were likely to be more influential in communicating misperceptions through their favored and public social positions than were other students.

Preliminary study of status beliefs and alcohol use among college students. Key work by Ridgeway (1991, 2000) and colleagues (e.g., Ridgeway & Balkwell, 1997) established conditions sufficient for the activation of a status mechanism and indicators (e.g., social prestige) for measuring status (Ridgeway, 2000). Their studies, as well as

foundational work and related indicators on social norms by Perkins and Berkowitz (1986), formed the basis for a recent study by Snyder and Sedlacek (2003).

Data from the *University New Student Census 2002 (UNSC)*, an annual survey of entering first-year students during summer orientation, were used for a preliminary study of status beliefs and alcohol use among students. Snyder and Sedlacek (2003) used these UNSC data from incoming first-year students ($N=1,689$) to investigate the relationship of participants' alcohol-related attitudes, normative perceptions, and status beliefs. Their findings suggested "that a status mechanism operates in the peer context of alcohol use and that the concept of status represents something different than either personal attitudes or normative perceptions" (p. 2). Data analysis revealed significant low to moderate correlations among the variables, suggesting that they were different but related.

Additionally, as predicted by status characteristics theory (Ridgeway, 1991; Ridgeway & Balkwell, 1997) when a status mechanism is in operation, regardless of their own attitudes toward drinking, "students perceived that most (95%) of their entering peers viewed drinking as related to social prestige" (p. 26).

Links to Social Norms Theory

Until the exploratory study (Snyder & Sedlacek, 2003) noted above investigating the relationships of alcohol-related attitude, normative perception, and status beliefs among students, social norms theory (Perkins & Berkowitz, 1986) had not been examined in light of status characteristics theory (Berger et al., 1966) or status construction theory (Ridgeway, 1991; Ridgeway & Balkwell, 1997). A rationale for conducting this study integrating the several theoretical perspectives was previously described in Chapter One. In essence, social norms theory examines aspects of reference group (i.e., *in-group*)

influence, a focus also of social identity and self-categorization theories, while status construction theory and status characteristics theory together assist in exploring the combined role of status beliefs and expectations as a possible source of *out*-group influence in the peer context of alcohol use.

Further investigation to clarify how students view drinking and status on campus may assist in explaining, for instance, why Carter and Kahnweiler (2000) found that social norms interventions did not work with Greek-letter social organizations on their campus, organizations composed of students already drinking above the social norm on that campus. Those students may tend to favor their group (reference group norms) or they may simply be high status, hypothesized here as higher-risk drinkers or students high status within groups (e.g., leaders) who like and want to maintain the high social status accorded them by the more general student population because of their alcohol-related and sometimes publicly exposed attitudes and behaviors.

Links to Social Identity/Self-Categorization Theory

Recent studies have suggested that multiple social-psychological mechanisms may operate simultaneously (Harrington & Fine, 2000). Mechanisms of status and self-categorization/social identity have been shown to operate simultaneously (Kalkhoff, & Barnum, 2000; Oldmeadow, Platow, Foddy, & Anderson, 2003), as two studies, both experimental, have recently demonstrated.

Kalkhoff and Barnum (2000) conducted an experiment designed to examine the effects of status-organizing and social identity processes on social influence, both independently and concurrently. Their study was one of the first two to investigate status

and social identity on behavior. (See also Sachdev & Bourhis, 1987 not cited by Kalkhoff & Barnum.)

Using an experiment protocol adapted from the status characteristics theory research program, Kalkhoff and Barnum (2000) randomly assigned university women student volunteers ($N=67$) to one of four experimental conditions. Investigators examined the effect of status between participants and group membership both independently and jointly in predicting level of influence received as determined by a behavioral measure. Kalkhoff and Barnum demonstrated “the simultaneous operation of status-organizing and social identity influence processes” (p. 111).

Following the work of Barnum and Kalkhoff (2000), Oldmeadow et al. (2003) used self-categorization and status theories to examine the roles of social status and shared group membership on social influence in two experiments. The purpose of their study was to investigate elements that might moderate the strength of each influence process. They wanted to know what concepts might join the two theories while explaining the different mechanisms and the “additive effects of status and group membership” (p. 141) found by Kalkhoff and Barnum.

Participants in both experiments (Exp. 1 $N=176$; Exp. 2 $N=66$) were university students in Australia. Together, findings from their two studies suggested that both status and self-categorization processes contributed “to a reduction in uncertainty in the influence setting” (pp. 148-149), and that they both played a role in determining “patterns of influence” (p. 149).

As editors Hogg and Ridgeway (2003) of the *Social Psychology Quarterly Special Issue* on social identity explained of the Oldmeadow et al. (2003) findings, status

was found to affect social influence through perceptions of competence and self-categorization through perceptions of similarity. Oldmeadow et al. recommended that future research be conducted “to verify the effects of status and shared group membership on both influence and perceptions of targets in a single study and to examine the role of motivations such as uncertainty reduction and self-enhancement in these relationships” (p. 149).

Findings Specific to Subgroups Under Investigation

A number of theoretical studies have examined status processes by using college students as participants (e.g., Kalkhoff and Barnum, 2000; Oldmeadow et al., 2003), found such processes in operation in that population, and then applied findings generally. It appears that only two related studies (Collins et al., 1985; Snyder & Sedlacek, 2003), one of them preliminary to this investigation (Snyder & Sedlacek), have investigated college students in light of status considerations with the goal of understanding that population. In the Collins et al. study status did not contribute to the behavior of the participants, all men, in the study; authors suggested that operationalizing status differently (i.e., as a category of drinker rather than as a demographic characteristic such as age or socioeconomic background) was a useful consideration. The Snyder and Sedlacek study examined first-year students and their alcohol-related attitudes, normative perceptions, and status beliefs. Findings suggested that a status mechanism was in operation in the specific context.

Investigations have demonstrated that race (e.g., Cohen, 1972) or gender (e.g., Ridgeway, 1991) may operate as a status characteristic and thus influence status expectations.

Although the Cashin et al. (1998) study of alcohol use and level of involvement in Greek organizations had a racially and ethnically diverse sample (about 25% of the 25,411 in the sample were non-White), there were no analyses by race or ethnicity in this study. The researchers did examine the effects of gender, however. Both alcohol use and heavy drinking (defined as five or more drinks in one sitting) were predicted by level of involvement for both men and women. They found that for men, all four levels of involvement in Greek life predicted significant differences in alcohol consumption, Greater involvement in Greek life thus predicted greater alcohol consumption. For women, participants who were not involved in Greek life differed significantly from the three other groups that were involved in some way as did those who only attended but were not more heavily involved. Active membership and leadership levels of involvement did not significantly predict differences in drinking for women.

Critique and Rationale for Integrating Status Theories In This Investigation

Status related theories allow for examination of social influence within a structural view of a context, including the possibility that participants not highly identified with their group of friends may seek social mobility by exiting the group. Status construction theory allows investigation into the role of perceived competence and its relationship to the role of perceived similarity or prototypicality offered through social identity perspectives. Further, status theories allow operationalization of perspectives of status that have been alluded to in college student related literature (e.g., Hansen, 1997; Newcomb and Wilson, 1966; NIAAA, 2002) but not systematically investigated except in the Snyder and Sedlacek (2003) preliminary study.

Construct Offered by Status Characteristics and Status Construction Theories

The constructs of status value and status beliefs were developed using two types of indicators. Indicators related to one's status beliefs regarding the perception of social prestige and competence of those students who consume alcohol are supported through status construction theory (Ridgeway, 1991; Ridgeway & Balkwell, 1997). Indicators related to one's general value of social status, in other words of being seen as socially competent and having social prestige, provide further measure of one's openness to status influences.

Defining the Model

The model incorporated elements and relationships from each of the theoretical perspectives discussed in this study. The investigation was based on social norms theory (Perkins & Berkowitz, 1986), the theory of planned behavior (Ajzen, 1985, 1991), social identity theory (Turner, 1982), self-categorization theory (Turner, 1985), and status construction theory (Ridgeway, 1991; Ridgeway & Balkwell, 1997). Given the limits of the sample size, elements from the theories were integrated to form a single normative perception variable. For instance, items representing normative perception of others' behaviors and attitudes from social norms theory were integrated with items representing subjective norm from the theory of planned behavior to form a more comprehensive normative perception variable. The same process occurred for personal attitude, integrating both the cognitive attitude measures from social norms theory and the affective attitude ones from the theory of reasoned action/planned behavior.

The time period prior to college was represented through the Time One elements of personal attitude (PA1) and normative perception (NP1). Integration into the college

environment was represented by elements from Time Two, namely alcohol use behavior at Time Two (AU2), status value (SV), social identity/self-categorization (SISC), personal attitude (PA2), normative perception (NP2), perceived behavioral control (PBC), and drinking intention (IN). The final endogenous variable, alcohol use behavior (AU3), was provided from data collected at Time Three.

Figure 2.3 represents the model as described here. Table 2.1 presents the construct names and abbreviations for the model across time. The model posits the following theoretically derived structural relationships:

Exogenous Variables

1. Normative perception at Time One (NP1) covaries with personal attitude at Time One (PA1), and directly contributes to alcohol use behavior at Time Two (AU2), status value (SV), social identity/self-categorization (SISC), personal attitude at Time Two (PA2), and normative perception at Time Two (NP2).
2. Personal attitude at Time One (PA1) covaries with normative perception 1 (NP1) and directly contributes to alcohol use behavior at Time Two (AU2), personal attitude at Time Two (PA2), normative perception at Time Two (NP2), status value (SV), and social identity/self-categorization influences (SISC).

Endogenous Variables

3. Alcohol use behavior at Time Two (AU2) directly contributes to status value (SV), social identity/self-categorization (SISC), personal attitude at Time Two (PA2), normative perception at Time Two (NP2), perceived behavioral control (PBC), intention (IN), and alcohol use behavior at Time Three (AU3).

4. Social identity/self-categorization directly contributes to the Time Two variables of normative perception (NP2), personal attitude (PA2), status value (SV), perceived behavioral control (PBC), intention (IN), and alcohol use behavior at Time Three (AU3).
5. Status value (SV) directly contributes to Time Two personal attitude (PA2), normative perception (NP2), perceived behavioral control (PBC), intention (IN), as well as alcohol use behavior at Time Three (AU3).
6. Normative perception (NP2) directly contributes to Time Two personal attitude (PA2), perceived behavioral control (PBC), intention (IN), and alcohol use behavior at Time Three (AU3).
7. Personal attitude at Time Two (PA2) directly contributes to perceived behavioral control (PBC), intention (IN), both at Time Two, and alcohol use behavior at Time Three (AU3).
8. Perceived behavioral control (PBC) directly contributes to both intention (IN) and alcohol use behavior at Time Three (AU3).
9. Intention (IN) directly contributes to alcohol use behavior at Time Three (AU3).

Final Endogenous Variable

10. Alcohol use behavior at Time Three (AU3) is thus directly explained by intention (IN), perceived behavioral control (PBC), personal attitude at Time Two (PA2), normative perception at Time Two (NP2), status value (SV), social identity/self-categorization (SISC), and alcohol use behavior at Time Two (AU2). It is indirectly explained by personal attitude at Time One (PA1) and by normative perception at Time One (NP2), both of which are said to covary.

The model is illustrated here in Figure 2.3 based on the hypothesized theoretical relationships among variables in an integrated way.

Figure 2.3. Model for the Peer Context of Alcohol Use Among College Students.

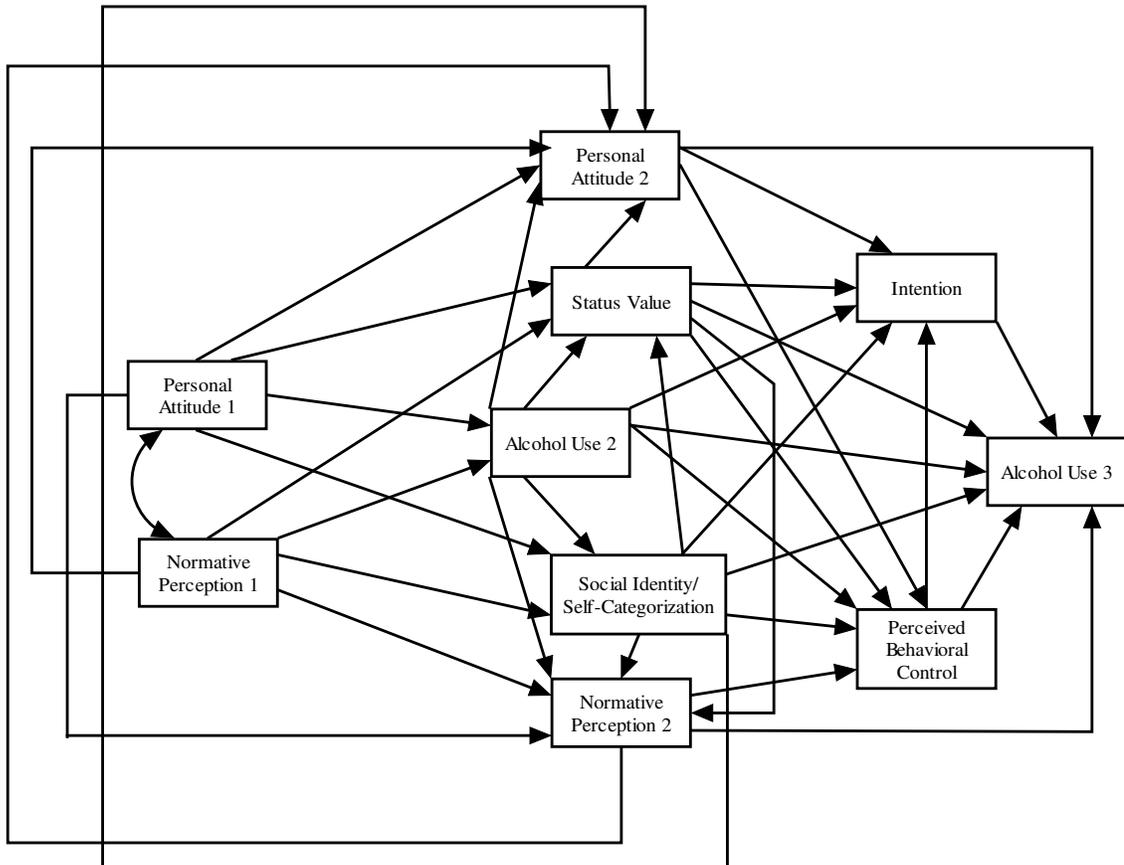


Table 2.1

Construct Names, Abbreviations, and Time Point Measured

Data point	Construct name	Abbreviation
Time One	Normative perception Time One	NP1
	Personal attitude Time One	PA1
Time Two	Alcohol use behavior Time Two	AU2
	Social identity & self-categorization	SISC
	Status value	SV
	Normative perception at Time Two	NP2
	Personal attitude at Time Two	PA2
	Perceived behavioral control	PBC
	Intention	IN
Time Three	Alcohol use behavior Time Three	AU3

*Defining the Constructs**Time One*

Normative perception at Time One (NP1). This variable was developed with three components. The first two components of this variable were based social norms theory (Perkins & Berkowitz, 1986). One represented a descriptive behavioral normative perception of quantity and frequency of consumption. The second represented injunctive normative perception of others' approval of drinking. Finally, the third component represented a subjective norm of friends' expectations based on Trockel et al. (2003) outlined previously to be "beliefs regarding behavior 'expectations of salient referent individuals or groups'" (Doll & Ajzen, 1992, p. 775 in Trockel et al., p. 51).

Personal attitude at Time One (PA1). Personal attitude was represented in two ways. Attitude was measured as it typically has been in studies of social norms theory

(e.g., Haines & Spear, 1996; Perkins & Berkowitz, 1986) with cognitive attitudes toward drinking. The second representation was the bipolar affective attitude regarding the act of drinking as used in studies of the theory of planned behavior (e.g., Ajzen, 1985, 1991; Johnston & White, 2003; Terry & Hogg, 1996).

Time Two

Alcohol use behavior (AU2). This construct was measured using indicators of quantity and frequency of use consistent with those of alcohol use at Time Three (AU3).

Social identity/self-categorization (SISC). As described in social identity theory (Turner, 1982), a person may have several social identities, each of which may play a role in determining behavior and related consequences of influence. For a college student regarding alcohol use, it has been hypothesized that “friends” (Trochel et al., 2003) and “peers at the University” (Terry & Hogg, 1996, p.781) may be sources of social identification. This construct included both sources of identification and indicators of the importance or salience of that group identification (e.g., Hains, Hogg, & Duck, 1997; Luhtanen & Crocker, 1992; Terry & Hogg, 1996). It also included one’s degree self-categorization (e.g., via measures of prototypicality, conformity, and similarity) (Turner, 1985) as a college student at the University and as a part of a friendship group, with representation of the level of importance of each of these groups. Measures related to family and high school friends were included to help distinguish the relative importance of campus identity, as home and family have been found important in socialization to college (Weidman, 1989). Thus, the construct represented the degree to which an individual might experience contributions from these various sources of identity.

Status value (SV). Another source of social influence was hypothesized to be status structures within the student culture. The model brought status construction theory (Ridgeway, 1991; Ridgeway & Balkwell, 1997) into the influence context, operationalizing status value through indicators of social prestige and social competence (Ridgeway, 2000) and based on a preliminary study suggesting a status mechanism operated for another cohort around college alcohol use (Snyder & Sedlacek, 2003).

Normative perception at Time Two (NP2). Measures at Time Two were the same as at Time One except that rather than asking about first-year students only, participants were also asked about their perceptions of undergraduate students generally. Previous data (Snyder & Sedlacek, 2001, 2002) demonstrated that entering first-year students did not distinguish between their perceptions of other first-year students and those of other undergraduates. It is a study limitation that the Time One items did not ask about the general undergraduate population on campus, but asking only about other first-year students at Time Two was too limiting given the socialization to campus in the fall.

Personal attitude at Time Two (PA2). Measures at Time Two were the same as at Time One.

Perceived behavioral control (PBC). This construct from the theory of planned behavior was included as a way to predict intention and behavior (Ajzen, 1985, 1991, 2001). Based on the Rhodes & Courneya (2003) recommendation that “only controllability items such as ‘whether or not I perform behavior X is entirely up to me’” (p. 89) and similarly stated items be employed to measure perceived behavioral control, this study used such a definition.

Intention. Fishbein & Ajzen (1975) defined intention as “a person’s subjective probability that he [or she] will perform some behavior” (p. 288). For the Time Two measure of intention items consistent with those developed by Johnston & White (2003) were used. Several subjectively interpreted items were used to provide indication of intention (i.e., intend to get drunk).

Time Three

Alcohol use behavior (AU3). As highlighted previously, behavior was represented using measures of frequency of past two-week high-risk “binge” (5 or more drinks) drinking and past four-week quantity and frequency of drinking. A scale was developed using three items to suggest risk of use; a latent variable was not used due to sample size restrictions.

Summary of the Model

The model explored the concept of status (Berger et al., 1966) as suggested in the idea of “social success” (NIAAA, 2002, p. 1) and whether it was somehow related to alcohol use on campus. Simultaneously, the model expanded the ways in which researchers examining college students and alcohol use have investigated reference groups. Integrating social identity (Turner, 1982) and self-categorization (Turner, 1985) theories allowed for greater understanding of reference groups as defined by individual participants rather than through external, researcher-imposed proxies such as residence hall or student organization. Variables from the theory of planned behavior (Ajzen, 1985, 1991, 2001) were investigated, including a student’s attitudes toward drinking, perceived subjective norm regarding drinking, intention regarding alcohol consumption and a student’s perceived behavioral control over the quantity and frequency he or she would

drink. Finally, the relationship of normative perception, from social norms theory (Perkins & Berkowitz, 1986), with each of the other constructs was investigated as well.

Variables for Subgroup Analyses

Analyses were conducted by racial-ethnic group (African American/Black, Asian Pacific American, Hispanic/Latino/Latina American, Multiracial/Biracial American, and White American students) and by gender (men and women) for White students, the only racial-ethnic group for whom the sample size was large enough to permit such analyses. Race, ethnicity, and gender have been previously addressed in the chapter where theory-related literature was available. More research is required for understanding the conditional effects of these variables.

CHAPTER THREE

METHODOLOGY

Study methodology is developed and explained in this chapter. First the study purpose and theoretical development are revisited. Next the chapter sections address the research design and research questions; the study context, sample population, initial sample and final study sample; instrumentation, measures, variables, and model; variables for subgroup analysis; study pilot; data collection procedures; and finally, statistical method, data analyses, missing data, and power analysis.

Purpose

The purpose of this study was to extend understanding of the “peer context” (Perkins & Berkowitz, 1986, p. 962) of alcohol use among college students using causal modeling in a longitudinal study with panel survey data. A key objective of the study was to apply multigroup analysis by racial-ethnic group (and also by gender where the sample size permitted) to examine the contributions of variables in the model to explanation of alcohol use by first-year college students, in hopes of adding to the research foundation to reduce alcohol use and its related harm among college students.

Theoretical Summary

In order to investigate the peer influence context on college student alcohol use, a theoretically derived measured variable path model was posited. The model integrated four key social psychological theories applied to the study of alcohol use among students, hypothesizing direct and indirect temporally related causal relationships among specified theoretical variables and their contributions to drinking behavior. The model was derived using social norms theory (SNT) (Perkins & Berkowitz, 1986), which includes normative

perception (NP), personal attitude (PA) and drinking behavior; the theory of planned behavior (TPB) (Ajzen, 1985, 1991), examined previously in health-related research (Godin & Kok, 1996), includes personal attitude (PA), subjective norm (SN), perceived behavioral control (PBC), intention (IN), and behavior; a variable based on social identity/self-categorization theory (SC) (Turner, 1982; 1985), previously utilized in research regarding college student alcohol use (Johnston & White, 2003); and a status related variable newly introduced to the conversation about alcohol use among students (Snyder & Sedlacek, 2003). Derived from sociological concepts through status characteristics theory (Berger et al., 1966) and status construction theory (SCT) (Ridgeway, 1991; Ridgeway & Balkwell, 1997; Ridgeway et al., 1998; Ridgeway & Erikson, 2000; Ridgeway & Walker, 1995), peer alcohol status beliefs (PASB) were found in a preliminary study (Snyder & Sedlacek, 2003) to be related to the peer context of alcohol use among students; personal status value (i.e., social prestige on campus), a measure of the importance of campus social status to an individual, was included in this study.

Research Design

This study used a longitudinal design modeling survey data collected for first-year college students surveyed at Times One, Two, and Three. Time One data collection was pre-college, during summer Orientation and prior to matriculation. Time Two was in mid-November of fall term. Time Three was about a month after the start of second term, and also a month after formal Greek membership rush. The study employed measured variable structural equation modeling (SEM), a form of causal modeling, to posit a theoretically derived path model and then tested the hypothesized path

relationships within and across individual racial-ethnic groups, and by race-gender as the sample size allowed (i.e., White men and White women). SEM, known also as analysis of covariance structures (Kline, 1998), was used because it could permit analysis of the direct and indirect contributions of variables in the model to the outcome variable of interest (Bollen, 1989; Kline). Multigroup analysis was conducted to discern differences in variable effects. Then paths in the model were constrained between groups in each multigroup analysis (racial-ethnic group and by gender for White men and women) to test for non-invariance (difference) in the paths by group.

Research Questions Guiding the Study

Four key research questions outlined in Chapter One guided the study analyses and discussion:

1. Is the total variance in alcohol use 3 explained different among the different racial-ethnic sub-groups? For White men versus White women?
2. What direct, indirect, and total effects are there on each endogenous variable in the model for each racial-ethnic group and for White men and White women? Do they differ in size, direction, and/or statistical significance by subgroup?
3. Within racial-ethnic subgroups, and by gender for White students, can the model demonstrate the sources of greatest risk or protection, and thus ways to focus intervention?
4. Can the model demonstrate common sources of risky or protective influence across all racial-ethnic groups and by gender for White men and White women?

Study Context

The study campus was a large, predominantly White, mid-Atlantic, public research institution with approximately 25,000 undergraduate students and 10,000 graduate students and located in a major metropolitan region. Strong intercollegiate athletics existed on campus and were supported by fans, particularly in football and men's basketball. A variety of academic programs in the arts and sciences were offered on the study campus, as well as professional programs such as education, architecture, and business. Students came to the campus from across the United States and around the world, though most of the entering undergraduates each year were from within the state. About 35% of the undergraduates were students of color.

Sample Population

The study population was traditional age (17-20 years old, as approved by the University Institutional Review Board) undergraduate first-year students at the institution who self-identified as African American/Black, Asian Pacific American, Hispanic/Latino/Latina American, White American, Multiracial/Biracial American (i.e., they identified with one of these racial-ethnic groups and did not identify as being an international student in the U.S. on a student visa). At the time of the study, the undergraduate first-year student body was predominantly White and nearly equal in gender representation. Most first-year students lived on campus, with a total of about 10,500 undergraduates in campus housing or in campus-affiliated, privately owned residence halls.

Initial Sample: Time One

The original sample was 3,505 entering first-year students who attended Summer Orientation 2004 at the University and who also participated in the *University New Student Census* (UNSC), an annual survey of incoming students administered on the study campus for 45 years, administered online since 1999. All students attending Orientation were asked to complete the UNSC. Included in this initial sample were all participants who, on visual inspection of the data, had sufficiently completed the 15 alcohol-related items from the UNSC (by providing a response to at least one item for each of the five subscales) were included in the initial sample. In this way, it was expected the final sample would represent the entering class and offer the sample size to provide a minimum of the commonly recommended requisite 5 participants per model parameter to be estimated. The sample was expected to be sufficient in size to conduct subgroup analyses, even in the smallest of subgroups (i.e., Latino/Latina students, initial $n=180$), after allowing for some level of study attrition.

The sample ($N=3,505$) represented more than 88% of students in the entering first-year class ($N=3,962$ as of August 2004), and approximately 93% of students attending Summer Orientation. Participants were predominantly 17 or 18 years old (94%). The initial sample was comprised of about half women and half men; nearly 65% of the initially responding students responding were White American; 9% African American/Black; 13% Asian Pacific American; nearly 6% Multiracial/Biracial American; and 5% Other. Less than 1% of respondents identified themselves as Native American, American Indian, or Alaskan Native or as international students. In a separate item on the UNSC asking about Spanish/Hispanic/Latino/Latina ethnicity, nearly 7% were

Spanish/Hispanic/Latino/Latina. Ninety-two percent of respondents were planning to live on campus when they entered the University, and another 7% were going to live with parents or guardians.

Final Study Sample

The final study sample ($N=837$) included students participating in the UNSC (Time One) and in both Time Two and Time Three surveys, and for whom predominantly complete survey data were available after implementing decisions regarding missing data (addressed later in this chapter). There were 11 participants for whom data looked complete visually but who were eliminated from the study based on missing data decisions once applied within each variable grouping (e.g., they may have had complete data on one subscale but no data on another). Another 18 students were either Native American/American Indian/Alaska Native or chose not to provide any data regarding race via the UNSC or the fall survey administration that included race-ethnicity and for whom the University had only “Unknown” listed; their racial-ethnic identity could not be determined.

In terms of race and ethnicity, the final sample was generally representative of the initial sample that took the UNSC except that there were substantially fewer African American/Black men than in the initial sample (2.6% vs. 3.3%). Visual examination of the data showed, however, that some of these men who were African American/Black were also Hispanic/Latino/Latina and were thus included in that group for analysis. Further, some of these African American/Black men identified as such through their responses on record with the University, but identified themselves further through the UNSC or the fall survey for this study as Multiracial/Biracial. The University records

derived data from items that did not allow multi-race choices, and the UNSC separated race and ethnicity, confounding the direct calculation of percentages. The study survey item combined race and ethnicity and allowed participants to choose as many as applied to them. Likely, some number of the original African American/Black men participating did continue and some did not, making the 2.6% higher but perhaps not 3.3%. Similar to other surveys (McCabe et al., 2002) there were generally fewer men in the final sample (36.3% vs. 49.4%), an artifact perhaps of survey research generally.

Table 3.1 reflects the total sample and a breakdown by race/ethnicity and gender over the course of the study from the survey at Time One, Time Two, and the final Time Three survey. There was substantial attrition over the course of the study related to several key reasons including no accurate email address on record and severely incomplete data. The most dramatic loss of participants was likely due to server failure. The email notices soliciting Time One participants to participate at Time Two were sent via a University server that failed during the survey period in late November, prompting a campus-wide failure notice from the University Provost. As many as one-third of the approximately 3,500 email invitations to Time One participants may never have been delivered, according to the Office of Institutional Technology (D. Henry, personal communication, January 2005). Further, it was believed that the delivery failures were likely random. The participants at Time Two reflected 37% of the initial sample, with perhaps as high as 56% of the students who actually received emails participating (in other words, discounting a third of the emails that were assumed not to have reached their destinations due to server failure).

Attrition from Time Two to Time Three was less severe with 65% of the fall respondents also participating in the spring at Time Three. The final sample ($N=837$) reflected 24% of the initial sample of participants at Time One. Although this was a very low participation rate, the degree to which the final sample was representative of the Time One and Time Two samples was encouraging, suggesting that much attrition may have been random and server related. Additionally, as will be outlined further in Chapter Five, the final sample was also comparable to national and state samples on key drinking measures (e.g., 29% of the final sample reported at Time One, the summer before college, heavy episodic or binge drinking in the past two weeks (5 or more drinks), consistent with the 29% of 12th grade students in the 2003 *Monitoring the Future* survey reporting this behavior).

Table 3.1

Sample Time One, Time Two, and Time Three by Race/Ethnicity and Gender

	Sample (N) ¹	African American/ Black	Asian Pacific American	Hispanic Latino/a	White	Multiracial and biracial	Men	Women
Initial UNSC (summer)	3505 ⁴	315 (9%)	463 (13.2%)	228 (6.7%)	2292 (65.4%)	194 (5.5%)	From univ records	From univ records
Time Two (fall)	1290 (37%) ⁵	94 (7.4%)	174 (13.7%)	34 (2.7%) ²	824 (64.9%)	116 (9.11%) ²	491 (38.7%)	773 (60.9%)
Time Three final data (spring) ³	837 ⁶ (65%) (24%)	60 (7.2%)	123 (14.7%)	51 (6.1%)	549 (65.6%)	54 (6.5%)	304 (36.3%)	533 (63.7%)
University records	3505	369 (10.5)	458 (13.1%)	185 (5.3%)	2119 (60.5%)	Not Avail.	1731 (49.4%)	1751 (50%)

¹ Note that total numbers in racial-ethnic groups or in the two gender groups will not sum to the total sample because students identifying as Native American/Alaska native (<1%) or as international students (1%) or who did not identify their race were not included in this list.

² Responses for students who identified at Time Two as Multiracial/Biracial by selecting more than one race were analyzed in the Hispanic/Latino/Latina group if that was one of their identity choices.

³ This sample and related analyses included only those students for whom complete data were available at the conclusion of actions regarding missing data.

⁴ This was the original number of UNSC participants. After removing participants without limited data on key alcohol items the number was 3,480, and once participants whose emails were returned and no alternate address was found ($n=12$), the initial sample was 3,468.

⁵ This number reflects responses after undelivered emails to approximately 1/3 of the initial sample as estimated by the Office of Information Technology (D. Henry, personal communication, January 2005) due to failure of the relevant campus server during this time frame.

⁶ There were 866 respondents from the fall sample who responded in the spring. After removing the 18 students for whom no race-ethnicity could be determined or who identified as Native American/Alaska Native or who identified as a student studying in the U.S. on a student visa, and the 11 participants for whom data appeared visually to be sufficiently complete for imputation but were found later not to be, the final sample was $N=837$. The percentages reflect 65% of 1,290 fall Time Two participants retained and 24% of total initial sample retained. See Chapter 5 for comparability to state and national samples.

Instrumentation

Three instruments were used to collect data for this study, the UNSC (Time One, pre-college), and the fall (Time Two) and spring (Time Three) versions of the survey developed specifically for this study. The spring survey provided data only for the final

endogenous variable, alcohol use 3. Data for normative perception 1 and personal attitude 1, the two exogenous variables in the model, came from the UNSC. All other data came from the fall (Time Two) survey. The survey length could not accommodate all measures for all Time Two variables at Time One, nor could the sample size accommodate more variables at Time One, though including all measures at Time One would have been informative.

Instrument One: University New Student Census 2004, Survey for Time One

The *University New Student Census* (UNSC) is a survey that has been administered by the Counseling Center on the study campus to incoming students each year for over 45 years; items generally vary, with some standard ones maintained for long periods. The UNSC was administered online starting in 1999, six years prior to the Time One collection for data use in this study. The UNSC is a confidential survey, and in 2004 when data were collected, it included 93 items (see Appendices B and C for consent form and survey). Data from the UNSC served this study as an existing data source.

The UNSC solicits demographic information (e.g., race, ethnicity, rank in high school class, parents' income and education levels) and inquires about the attitudes, expectations, and experiences of participants. Two thirds of the items were Likert scaled from Strongly Agree (1) to Strongly Disagree (5), with neutral midpoint, and another third were multiple-choice items not used in this study. The UNSC (Time One data point) provided data for the pre-entry indicators for normative perception (SNTNP) and personal attitude (SNPA) used in social norms theory, as well as measures of subjective norm (SN) and personal attitude (TPBPA) from the theory of planned behavior. Together subjective norm and normative perception formed the two exogenous measured variables

in the model; normative perception (NP1), also measured at Time Two, and a theoretically combined version of personal attitude (PA1), measured at Time Two as well. The UNSC provided key demographic information, including measures to assist in determining grouping variables for multigroup analysis (i.e., race and ethnicity, in this study). The University data warehouse provided the gender variable, matched to student identification numbers collected via the UNSC and as approved by the University Institutional Review Board.

At the 2004 administration, the investigator for the current study had served as the graduate coordinator for the UNSC for five summers. In her role as graduate research assistant with the principal investigator for the UNSC, she was a named student investigator and also had the opportunity to develop and include the alcohol-related items for that survey.

Instruments Two and Three: Surveys for Time Two and Time Three Measures

This investigator developed online surveys and associated consent forms specifically for Times Two (Appendix E, associated consent Appendix D) and Three (Appendix H, associated consent Appendix G) data collections for this study. They each included the same central items related to measures for the model. The Time Two survey provided measures for nine groups of indicators: normative perception (descriptive and injunctive) and subjective norm, which combined to normative perception (NP2), for personal attitude (PA2) (from SNT, cognitive & TPB, affective), alcohol use (AU2), social identity/self-categorization (SISC), personal status value (SV), perceived behavioral control (PBC), and intention (IN). For this study the survey at Time Three provided only the three items related to alcohol use 3 (AU3) that were used to create a

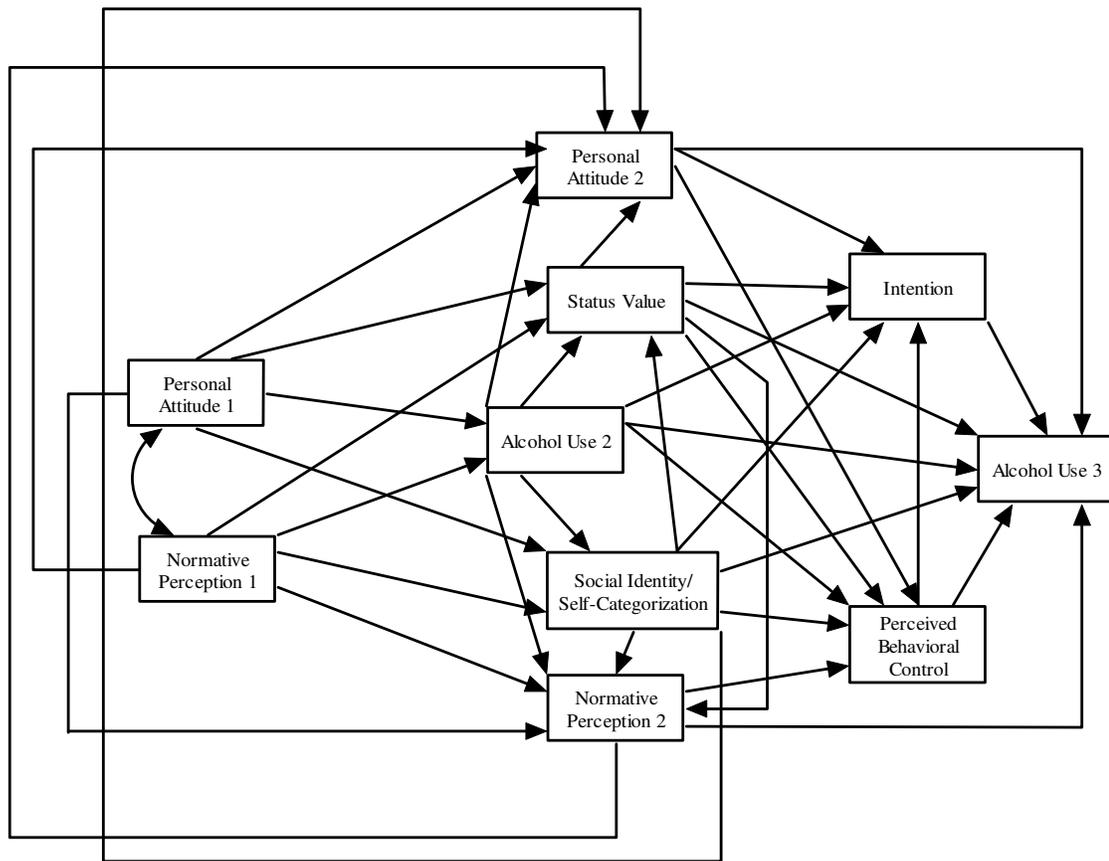
score for that measured variable. Although the data were not analyzed for this study, one item in both the Time Two and Time Three surveys permitted participants to respond in 50 words to “What would you like to tell this researcher about social life at” University Name?

The Peer Influence Context: Development of Model, Variables and Measures

As explained in Chapter Two and reviewed at the start of this chapter, the model under study was derived from four social psychological theories and related research, particularly as applied to the study of alcohol use among students. Variables are listed here in the order in which they appear in the model. Then the peer influence context model is illustrated (Figure 3.1), followed by a presentation of how an index score was created for each observed variable in the model. Next the variables and related measures are detailed, followed by a discussion of the method of handling missing data.

There were 10 variables in the model, including two exogenous ones measured at Time One that were modeled to covary, seven intermediate endogenous variables measured at Time Two, and a final outcome endogenous variable measured at Time Three. Exogenous variables included normative perception (NP1) and personal attitude (PA1). Endogenous variables included alcohol use 2 (AU2), social identity/self-categorization, (SISC), personal status value (SV), normative perception 2 (NP2), personal attitude (PA2), perceived behavioral control (PBC), and intention (IN). The final endogenous variable, the outcome variable of interest, was alcohol use 3 (AU3). Table 3.2 outlines the construct names and abbreviations, the survey source and item numbers for each variable, and data type following the presentation of the variables and items included.

Figure 3.1 Peer Influence Context Path Model.



Development of Variables and Measures

The original intent of this study was to allow between two and four indicators to be developed for each variable from the measures detailed below and to use latent variable SEM for the model and analyses. However, the final sample size of the smallest racial-ethnic subgroups precluded this option. Given the gap in the literature regarding the role of race-ethnicity in alcohol use among students, retaining the opportunity to examine the model across racial-ethnic groups was key. The study was thus refocused to be a measured variable structural equation model, essentially a path model using SEM software (EQS 6.1, Bentler, 2004) to allow simultaneous multigroup analyses, to provide direct, indirect, and total effects and their significance levels, and to allow the paths to

tested for non-invariance (difference) across groups. This shift from latent variable to measured variable SEM allowed inclusion of data for five racial-ethnic groups: African American/Black ($n=60$); Asian Pacific American ($n=123$); Hispanic/Latino/Latina American ($n=51$); Multiracial/Biracial American ($n=54$); and White American ($n=549$).

Variables are presented below in the order in which they appear in the model along with the detail of the items included in the variable. Table 3.2 highlights the variable name and abbreviation, its source and item numbers, and the type of data provided. The method of development for index scores to permit inclusion of all the items in the study as 10 measured variables is presented and followed by the overview of the variables and related items.

Table 3.2

Model Construct Names, Abbreviations, Survey and Item Number, and Data Type

Data point	Construct name	Abbrev	Source	Item No.	Data type
Time One	Normative perception 1 descriptive, injunctive (SNT); subjective norm (TPB)	NP1	UNSC 04	14, 40, 42; 72, 73, 74; 20, 41, 47, 48	Interval & ratio
	Personal attitude Time One SNT PA; TPB PA	PA1	UNSC 04	28, 37, 38; 66, 67, 68	Interval
Time Two	Alcohol use 2	AU2	Survey 2	74, 75, 76	Interval & ratio
	Social identity & self-categorization	SISC	Survey 2	15, 29, 52, 51; 37, 1, 34; 60, 44, 66, 70; 6, 16, 20; 7, (22) ¹ , 41, 72	Interval
	Status value	SV	Survey 2	(17) ¹ , 21	Interval
	Normative perception 2 descriptive, injunctive (SNT); subjective norm (TPB)	NP2	Survey 2	2, 33, 39; 23, 3, 50, 43; 77, 78, 79; 19, 63, 9; 80, 81, 82	Interval & ratio
	Personal attitude 2 SNT PA; TPB PA	PA2	Survey 2	35, 48, 49; 84, 85, 86	Interval
	Perceived behavioral control	PBC	Survey 2	42, 47, 65, 31, (59) ¹ , 56	Interval
Intention	IN	Survey 2	87, 88, 32, 40, (57) ¹ , 71	Interval	
Time Three	Alcohol use 3	AU3	Survey 3	64, 65, 66	Interval & ratio

¹ Item was eliminated to increase scale reliabilities in all groups.

Exogenous Variables (Time One)

Two exogenous variables, normative perception (NP) and personal attitude (PA) were represented in the model and were combinations of theoretically derived indicators from both social norms theory and the theory of planned behavior. The variable

normative perception (NP) was derived from measures of injunctive (approval) and descriptive (actual behavior) normative perceptions as in social norms theory and from subjective norm as in the theory of planned behavior. The variable personal attitude (PA) was derived from cognitive measures of attitudes toward drinking as in social norm theory and from affective bipolar measures of attitude as called for in the theory of planned behavior.

Exogenous Variable: Normative Perception (Time One)

The construct of normative perception (NP) was developed using indicators for descriptive and injunctive normative perception (NP) as well as subjective norm (SN). Scores for subjective norm ranged from 4 to 20, for descriptive normative perception from 0 to 52, and for injunctive normative perception from 3 to 15 to develop the variable normative perception (NP) at both Time One and Time Two. A single average index score was created using the process outlined later in this chapter. Higher scores reflected higher risk levels of normative perception.

Normative perception (NP) was measured using six indicators, three for descriptive norms and three for injunctive norms (Borsari & Carey, 2003; Trockel et al., 2003). Both injunctive (perceived attitudinal approval) and descriptive (perceived behavior) normative perceptions have been examined in studies of college student drinking (e.g., Borsari & Carey, 2003; Haines & Spear, 1996; Perkins & Berkowitz, 1986; Trockel et al., 2003). Descriptive norms are those that reflect one's perception of what most others actually do, the behavior in which one perceives most others engage. Injunctive norms, on the other hand, reflect what one perceives most others approve.

Descriptive normative perception. The first two items (4 week quantity and frequency) summed to a minimum of 0 and a maximum of 28. Responses included no days/no drinks (0) to a maximum of 28 days, or 14 or more drinks per day. The final item (2 week) was scored 0-14 and provided another indicator of descriptive normative perception, this one of high-risk drinking specifically. These items were recoded so that zero represented a reported absence of the behavior.

- Thinking specifically about the past 4 weeks or 28 days, on how many days, if any, do you think most entering first-year students have had at least one drink of beer, wine, or liquor? (Scored 0 to 14.) Survey 2: 80; UNSC: 72
- Again, in the past 4 weeks or 28 days, on days when most entering first-year students drank alcohol how many drinks do you think they typically had? (Scored 0 to 14.) Survey 2: 81; UNSC 73.
- In the past two weeks (14 days) on how many days do you think most University Name entering first-year students consumed 5 or more drinks in a 24-hour period? (Scored 0 to 14.) Survey 2: 82; UNSC 74.

Injunctive normative perception. These items were Likert scaled from Strongly Agree (1) to Strongly Disagree (5), with a neutral midpoint. Higher scores reflected higher risk levels of normative perception. A minimum score on this indicator was 3 and maximum 15.

Two of the three items were adapted from a categorical item from Perkins and Berkowitz (1986) and addressed drinking in a self-defined way, asking students to indicate their perception of most others' ideas about getting drunk. The other item was based on two areas of study, normative perception of what an individual thinks most

other students do (Haines & Spear, 1996; Perkins & Berkowitz; Trockel et al., 2003) and also on studies regarding high risk nature of consuming five (5) or more alcoholic beverages in one sitting (e.g., Cashin et al., 1998; Johnston & White, 2003), a more objective measure of the idea of getting drunk.

- The attitude of *most* entering first-year students at University Name is that getting drunk is not okay. (Reverse scored.) (1 to 5) Survey 2: 2; UNSC 14
- Regarding alcohol, the attitude of most University Name entering first-year students is that drinking *5 or more* drinks in one sitting is okay. (1 to 5). Survey 2: 33; UNSC 42.
- Most entering first-year students at University Name think sometimes getting drunk is fine. (1 to 5) Survey 2: 39; UNSC 40.

Subjective norm. Four subjective norm items adapted from the study by Trockel et al. (2003) of normative perception in a fraternity setting were used to create this subscale. Rather than use the phrase “my fraternity brothers expect me to” (Trockel et al., p. 53) as in the cited study, the items in the current study used the phrase “my friends expect me to.” Items were reflected as appropriate from responses provided on the instrument to be consistent with other constructs so that higher scores reflected a higher risk subjective norm. Thus scores ranged from (5) Strongly Agree to (1) Strongly Disagree, with a neutral midpoint. Each item served as one of items to create the indicator for subjective norms.

- My friends expect me to drink with them at parties. Survey 2: 23; UNSC 20.
- My friends expect me to drink with them on weekdays. Survey 2: 3; UNSC 41.

- My friends expect me to get drunk with them on weekends. Survey 2: 50; UNSC 47.
- My friends expect me to drink with them on weekends. Survey 2: 43; UNSC 48.

Exogenous variable: Personal attitude (Time One)

Personal attitude was represented in two subscales. Three items were developed from the unipolar, cognitive measure of attitude as it typically has been represented in studies of social norms theory (e.g., Perkins & Berkowitz, 1986) with attitude toward the idea of getting drunk and toward a quantity and frequency of drinking alcohol. The second representation, reflecting the theory of planned behavior (Ajzen, 1985, 1991, 2001), was the bipolar affective attitude regarding the act of drinking. The six measures for personal attitudes from each theoretical perspective were summed and then averaged to provide a single score representing the two types of attitudes. Scores for the social norms representation of personal attitude ranged from 3-15, as did the possible scores for the theory of planned behavior representation of personal attitude. Higher scores reflected higher risk personal attitude.

Social norms theory personal attitude. Personal attitude was also represented as they typically have been in studies of social norms theory (e.g., Haines & Spear, 1996; Perkins & Berkowitz, 1986) regarding one's attitude toward quantity and frequency of drinking alcohol. The items for this construct were developed similarly to those for normative perception. Each of three items for social norms personal attitude was measured on a 5-point Likert scale anchored with Strongly Agree (1) and Strongly Disagree (5), with a neutral midpoint. Each item served as an indicator for personal

attitude. As with normative perception, personal attitude measures were scored in a direction such that higher scores reflected higher risk levels of personal attitude.

- My attitude is that getting drunk is not okay. Survey 2: 35; UNSC 28.
- Regarding alcohol, my attitude is that drinking 5 or more drinks in one sitting is okay. Survey 2: 48; UNSC 37.
- I think sometimes getting drunk is fine. Survey 2: 49; UNSC 38.

Theory of planned behavior personal attitude (TPBPA). For this indicator measures of personal attitude were represented as they typically have been in studies of the theory of planned behavior (Ajzen, 1991), measuring a bipolar affective attitude, in this case an attitude regarding the act of drinking. Three items used in the Johnston and White (2003) study of high risk drinking by college students were used to provide three items to create this indicator. Each of these items was scored on a 5-point semantic differential, with a neutral midpoint, providing each of the anchors noted. A score of 5 was given to the riskiest of the anchor responses.

Drinking 5 or more drinks in a single session is ...

- (1) Unenjoyable/Enjoyable (5) Survey 2: 84; UNSC 66
- (5) Favorable/Unfavorable (1) Survey 2: 85; UNSC 67
- (5) Satisfying/Unsatisfying (1) Survey 2: 86; UNSC 68

Endogenous Variables (Time Two)

There were seven endogenous variables modeled to contribute to the final endogenous outcome variable of alcohol use 3 (AU3): alcohol use 2 (AU2), social identity-self categorization (SISC), personal status value (SV), normative perception (NP2), personal attitude (PA2), perceived behavioral control (PBC), and intention (IN).

Alcohol use was measured at Time Two in the same way that it was measured at Time Three for the final endogenous variable (AU3). At both Time One and Time Two personal attitude (PA) was measured in the same way. Normative perception (NP2) was measured at Time Two in the same way that it was measured at Time One, except that another set of items not available at Time One was used to measure normative perception for other University students (not just other first-year students) at Time Two, increasing the scale reliability across groups.

Alcohol Use Two (AU2)

Items for this variable were consistent with those of the outcome variable. Scores were summed and averaged to create a drinking index score related to quantity, frequency and high-risk drinking (5 or more).

- Thinking specifically about the past FOUR WEEKS or 28 days, on *how many days*, if any, did you have at least one drink of beer, wine, or liquor? (Scored 0-14.) Survey 2: 74
- Again, in the past FOUR WEEKS or 28 days, on days when you drank alcohol, *how many drinks* did you typically have? (Scored 0-14.) Survey 2: 75
- In the past TWO WEEKS (14 days), on how many days have you consumed 5 or more drinks in a 24-hour period? (Scored 0-14.) Survey 2: 76

Social Identity/Self-Categorization Influences (SISC)

The model also included a variable from self-categorization/social identity theory (SC, Turner, 1982, 1985). As described in social identity theory (Turner, 1982), a person may have several social identities, each of which may play a role in determining behavior and other related consequences of influence. For a college student, it has been

hypothesized that both “friends” (Trockel et al., 2003) and “peers at the University” (Terry & Hogg, 1996, p. 781) may be sources of social identification. The current construct, SISC, included both sources of identification. It also included one’s degree of self-categorization (e.g., via measures of prototypicality, conformity, and similarity) (Turner, 1985) as a college student at the University and as a part of a friendship group, with representation of the level of importance of each of these groups to the individual. In these ways the variable represented the degree of importance these sources of identity played for an individual, arguably key in the peer influence context of alcohol use among students (Carter & Kahnweiler, 2000; Haines & Spear, 1996; Johnston & White, 2003; Pascarella & Terenzini, 1991; Perkins & Berkowitz, 1986; Trockel et al., 2003). Four items related to one’s identification with home and home friends were included as well since research has demonstrated the importance of these relationships, particularly among some populations (Weidman, 1989.)

Measures were adapted from two sources. The measures of prototypicality, similarity, and conformity were adapted from Hains et al. (1997) using items similar to those from their post-experiment survey questionnaire and based on research using self-categorization and social identity theories. Scores from these four items were scaled Strongly Agree (1) to Strongly Disagree (5) with a neutral midpoint. Items provided subscales for self-categorization related to friends and one for self-categorization related to undergraduates at the University. Two items adapted from Luhtanen and Crocker (1992) who focused their study on social identity theory, and a third item developed for this study, helped form social identity subscale measures. The items related to home identity referenced high school friends and campus friends as a way to distinguish the

degree to which students identified with specific groups socially fall term. Similarly, parents have been found to be influential for some college students and other adolescents (Duncan, Duncan, & Hops, 1994; Weidman, 1989; White & Jackson, 2004/2005), so an item focused on family identification was included to help distinguish the strength of campus identification. Thus social identity/self-categorization was represented using five subscales, two for friends, two for undergraduate students at the University, and one related to a student's ongoing connections to home, allowing contribution from several potential social identities. Items were reverse coded if necessary to contribute higher scores to riskier responses.

My Group of Friends

Self-Categorization

- Socially, I am a lot like the typical person in my group of friends. Survey 2:15
- When it comes to social life, I am similar to the typical person in my group of friends. Survey 2:29
- I drink about *as much* alcohol as the typical person in my group of friends. Survey 2: 52
- I drink alcohol about *as often* as the typical person in my group of friends. Survey 2: 51

Importance/Identity:

- Being a part of my group of friends is important to me. Survey 2: 37
- In general, belonging to my group of friends is an important part of my self-image. Survey 2: 1
- The group of people I am friends with is an important reflection of who I am. Survey 2: 34

Other Maryland Undergraduate Students

Self-categorization

- Socially, I am a lot like the typical undergraduate at Maryland. Survey 2: 60
- When it comes social life, I am similar to the typical Maryland undergraduate. Survey 2: 44
- I drink about *as much* alcohol as the typical Maryland undergraduate. Survey 2: 66
- I drink alcohol about *as often* as the typical Maryland undergraduate. Survey 2: 70

Importance/Identity

- Being a University of Maryland student is important to me. Survey 2: 6
- In general, being a Maryland student is an important part of my self-image. Survey 2: 16
- Being a Maryland student is an important reflection of who I am. Survey 2: 20

Identity with Home Friends and Family

- This semester I have socialized frequently with my high school friends. Survey 2: 7
- I keep in close contact with my parents. Survey 2: 22
- I socialize mainly with other University Name undergraduates. Survey 2: 41
- When asked about my group of friends, I tend to think mostly of my high school friends. Survey 2: 72

Personal Status Value (SV)

This construct was related to status characteristics theory (Berger et al., 1966) and status construction theory (Ridgeway, 1991; 2000; Ridgeway & Balkwell, 1997; Ridgeway et al., 1998; Ridgeway & Erikson, 2000; Ridgeway & Walker, 1995). It was derived from the work and language used to operationalize status construction theory (i.e., social prestige) from Ridgeway and colleagues. Another source of social influence, it was hypothesized to be associated with status structures within the student culture. The variable personal status value brought status construction theory (Ridgeway, 1991; Ridgeway & Balkwell, 1997) into the influence context, operationalizing status through indicators of social prestige and social competence (Hogg & Ridgeway, 2003; Ridgeway, 1991, 1997, 2000; Ridgeway & Balkwell, 1997; Ridgeway et al., 1998; Ridgeway & Erikson, 2000) together with an indicator of the value placed on social status (Thye, 2000) by a participant.

Two items formed this indicator, both Likert scaled from Strongly Agree (1) to Strongly Disagree (5), with a neutral midpoint. Scoring was reversed so that hypothesized higher risk values had higher scores. The two items summed (2-10) to

provide an index score for a participant's personal status value. The second measure, one related to social competence, was eventually dropped after analysis within racial-ethnic groups because of reliability concerns for some groups. See Chapter Four for more detail.

- Having social prestige on campus is important to me. Survey 2: 21
- I want to be seen as socially competent. Survey 2: 17

Normative Perception (NP2)

The 10 items from normative perception 1 were included in this variable at Time Two. Six additional items were added to the survey and included in this measure because they made the reliabilities of the scale among the different groups somewhat higher. The items were the same as the ones asked at Times One and Two about “most other first-year students” but were asked this time also about “most other University Name students.” They are listed below and reflect both descriptive and injunctive normative perception, as discussed in the earlier normative perception 1 segment:

- Thinking specifically about the past FOUR WEEKS or 28 days, on how many days, if any, do you think most other University Name undergraduate students have had at least one drink of beer, wine, or liquor? (Scored 0 to 14.) Survey 2: 77.
- Again, in the past FOUR WEEKS or 28 days, on days when most other University Name undergraduate students drank alcohol, how many drinks do you think they typically had? (Scored 0 to 14.) Survey 2: 78.

- In the past TWO WEEKS (14 days) on how many days do you think most other University Name undergraduate students consumed 5 or more drinks in a 24-hour period? (Scored 0 to 14.) Survey 2: 79.
- The attitude of *most* University Name undergraduate students is that getting drunk is not okay. (Reverse scored.) (1 to 5) Survey 2: 19.
- Regarding alcohol, the attitude of most University Name undergraduate students is that drinking *5 or more* drinks in one sitting is okay. (1 to 5). Survey 2: 63.
- Most entering undergraduate students at University Name think sometimes getting drunk is fine. (1 to 5) Survey 2: 9.

Personal Attitude (PA2)

The three items from social norms theory personal attitude and the three from the theory of planned behavior personal attitude asked at Time One were asked again at Time Two. The items are listed in the previous section and identified by number for the Time Two survey as well as the summer survey.

Perceived Behavioral Control

Consistent with recent research by Rhodes and Courneya (2003), this study used measures of “controllability” (p. 83) for the variable perceived behavioral control (PBC), consistent with Ajzen’s (1991) interpretation of PBC as the extent to which one feels that a behavior is under his or her “volitional control” (Ajzen, 1985, p. 24). Rhodes and Courneya (2003) used three items based on a 7-point scale related to choosing to exercise over a two-week period. This study incorporated items related to quantity and frequency of drinking, as well as to the general idea of getting drunk within the context of segments of a college term. Exercise is a habit to promote more of among many populations,

whereas drinking more among first-year traditional age college students is a habit to discourage rather than promote. On a college campus drinking less (i.e., a more healthful behavior) may be more likely beyond one's control than drinking more, in contrast to the Courneya (2003) items examining perceived behavioral control for exercising more (i.e., a more healthful behavior). Items were therefore phrased primarily in terms of how controllable it might be for a participant to drink less rather than more.

The items were all measured using 5-point scales with a neutral midpoint (3) to be consistent with other scaled measures and variables in the study. Six items were grouped to provide three subscales. Items were summed in groups, providing a score for quantity (2-10), one for frequency (2 to 10), and a general drinking score (2 to 10) for this factor. Recoding of items was done so that all items were scored in the same direction (1, high perceived behavioral control to 5, low perceived behavioral control, with 5 being highest risk for high risk drinking).

Quantity

- How much I drink is not entirely up to me. Survey 2: 42

Frequency

- How often I drink alcohol is not entirely up to me. Survey 2: 47
- How often I get drunk is entirely up to me. Survey 2: 65

General

- Whether or not I get drunk is entirely up to me. Survey 2: 31
- I feel I have little personal control over my drinking alcohol. Survey 2: 59
- When it comes to alcohol, my drinking choices are entirely my own. Survey 2: 56

Intention (IN)

Two items were adapted from Johnston and White (2003) for the measure of intention. Johnston and White used 7-point Likert scales but this study adapted those to be 5-point, consistent with other scales in this study. Three additional measures provided general indication of drinking intention, with two items asking students the degree to which they intended to drink or get drunk sometime during the remainder of the school year and one asking them the degree to which they intended to drink more than 4 drinks in a 24-hour period sometime during the rest of the school year. These additional items were included since the final outcome variable would not be measured until over three months later and the Johnston and White items looked only at high-risk drinking in the immediate two-week period. Scores were recoded as needed so that the highest risk responses provided the highest scores. The items used were as follows, all scored 1-5 with a neutral midpoint:

- I intend to drink 5 or more standard alcoholic beverages in a single session in the next two weeks. 1=extremely likely, 5=extremely unlikely Survey 2: 87
- I do intend/do not intend to drink 5 or more standard alcoholic drinks in single session in the next two weeks. 1=do intend, 5=do not intend Survey 2:88
- I intend to drink sometime next semester. 1=strongly agree, 5= strongly disagree Survey 2: 32
- I intend to get drunk sometime next semester. 1=strongly agree, 5= strongly disagree Survey 2: 40

- I intend to drink 4 or more alcoholic beverages in a 24-hour period sometime during the remainder of the school year. 1=strongly agree, 5=strongly disagree

Survey 2: 57

- Next semester I intend to drink no more than four alcoholic beverages in one sitting at any time. 1=strongly agree, 5=strongly disagree Survey 2: 71

Final Endogenous Variable: Alcohol Use Time Three (AU3)

Measures for this Time Three variable were repeated indicators measured also as the first endogenous variable in the model, alcohol use 2. Johnston and White (2003) used a single measure of reported behavior in their study to state if participants had had “five or more standard alcoholic beverages in a single session in the last 2 weeks” (p. 69). This measure is consistent with the literature in terms of quantity and frequency. However, the current study extended this measure by adding indicators of past 4 weeks quantity and frequency of drinking, a typical time frame for such measures (e.g., Clapp et al., 2003). Items were scaled 0-14 and together provided scores from 0 to 52, with zero recoded so that it represented an absence of drinking for each item. The items were summed and averaged to provide the measured variable, alcohol use 3.

- Thinking specifically about the past 4 weeks or 28 days, on how many days, if any, did you have at least one drink of beer, wine, or liquor? (Scored 0-14.)
Survey Time Three: 64
- Again, in the past 4 weeks or 28 days, on days when you drank alcohol, *how many drinks* did you typically have? (Scored 0-14.) Survey Time Three: 65
- In the past two weeks (14 days), on how many days have *you* consumed 5 or more drinks in a 24-hour period? (Scored 0-14.) Survey Time Three: 66

Using Measures to Determine Averaged Index Scores for Variables

Seventy-two indicators were used to operationalize the 10 observed variables modeled in this study, with some represented at two points in time (NP, PA, and AU). In order to maintain the diversity of measures in the originally planned latent variables, steps were taken to create a single score (i.e., average index score of all items in the variable scale) to represent each measured variable. First, scale reliabilities were calculated for the items included in the score of each variable, with calculations reported for the entire final sample ($N=837$) and for each racial-ethnic subgroup in the study, as well as for White men, White women, all men and all women. These reliability results are presented in Chapter Four, predominantly as Cronbach's alpha coefficients (one was a test-retest reliability), ranging from a low of $\alpha = .70$ to a high of $\alpha = .97$.

Reliability results generally demonstrated that the scales operated similarly across racial-ethnic groups and among men and women, as well as by gender and for White men and women. In one circumstance (status value) this was not the case and necessitated dropping an item in order to allow for comparable scale reliabilities. Additionally, in three other cases (social identity/self-categorization, perceived behavioral control, and intention) reliability was increased across all groups by dropping one item from the scale. These circumstances are addressed in Chapter Four.

After reliabilities were determined to be sufficiently comparable across groups, all items were then placed on a common 0-14 scale, the scale used for the quantity and frequency of drinking items for the descriptive normative perception subscale and alcohol use scale. This meant converting items scaled originally 1-5 to be 0-14 (i.e., subtracting 1 from 1-5 scores and multiplying that score by 3.5). In all situations where there was

more than one item to create a variable (i.e., all variables except for personal status value), scores for each item in a variable scale were summed, and then averaged to create the 10 observed variables in the model. Placing all variables on a common scale and using an average index score (i.e., 0-14) rather than a total index score (e.g., maximum 14 versus maximum 238) was done to help avoid potential failure of model convergence associated with small samples sizes and model complexity (Bentler, 2004). This process of creating index scores was also expected to assist in reducing any potential multicollinearity problems within a scale (Kline, 1998).

Variables for Subgroup Analyses

Subgroup analyses were conducted with each of five racial-ethnic groupings: African American/Black, Asian Pacific American, Hispanic/Latino/Latina American, White American, and Multiracial/Biracial American were identified from participants using the Time Two instrument. In cases where participants did not provide a response for racial-ethnic identity, the responses the student provided in the UNSC (Time One) were used to determine racial-ethnic grouping. As a last source, the university records system provided the source of information. Where no race-ethnicity could be determined and in cases where the only race or ethnicity listed was Native American/Alaska Native (< 1%), the cases ($n=18$) were excluded from further analysis.

Students who marked only a single group for their race-ethnicity were placed in that group (i.e., African American/Black, Asian Pacific American, White American, and also Hispanic/Latino/Latina American). Any student for whom race-ethnicity could not be determined was excluded from this investigation. Students who marked Hispanic/Latino/Latina alone or in combination with any other group were considered to

be in this group for analysis ($n=51$); thus this is an ethnically similar but racially diverse group. Students who marked any two or more racial groups but said they were not Hispanic/Latino/Latina American were grouped as Multiracial/Biracial American for the study ($n=54$).

Pilot

A pilot survey was conducted in order to determine the time required to complete the Time Two and Time Three instruments and to find any ambiguous language used in the surveys. Five undergraduate students who had served as research assistants in the summer data collection and had fielded questions and concerns from Time One participants were solicited by the investigator and paid a nominal fee (\$10) to complete the survey online, to time themselves, to make notations on the paper copy of the surveys of questions or concerns they had, and to talk with the investigator about the surveys. Adjustments were made to the final surveys from this pilot process.

Specifically, the students suggested that they liked having a guaranteed incentive or a more likely one rather than simply a big prize or two. Based on this feedback, the investigator was able to secure about 800 food coupons (e.g., bagel breakfast sandwich, chips and guacamole, sandwich) and 25 coupons for activities in the student union (e.g., movie passes, bowling passes) to be awarded to more students rather than use solely larger prizes. Capitalizing the TWO WEEKS and FOUR WEEKS in the alcohol use questions was suggested and done in order to be clear about the time frame. Two concerns related to the wording of the questions. One student said that determining a response to questions with the phrase “typical student” was difficult because there was not necessarily such a person. This feedback was important, but the theory and research

specifically call for this language. There were a number of questions worded similarly, so one student suggested clarifying again about mid-way through the survey that they were not repeated items and should be answered separately; this kind of statement was included. An African American/Black woman reviewing the solicitation email to be sent to students identifying as students of color subsequent to the initial email liked it. She believed it was valuable, she said, because students of color on the campus tended to feel in the minority anyway, and being a first-year student makes them feel more so. She thought the additional email would encourage them to participate and make them know that their input was important too. Finally, the timing of the survey was as expected and no adjustments to the length of it were needed.

Data Collection Procedures

Online data were collected in two ways. Time One data were collected online through the summer 2004 UNSC administered in 30-minute blocks during summer orientation sessions June and July 2004. Data for Times Two and Three were collected via email solicitation of participants from Time One providing them an Internet link within the email to the Times Two and Three surveys. Access to the all of the surveys for each participant was through their Directory Identification Code and password, provided all students through the University for online activities. During the Time Two data collection in November there was a server failure, as noted previously in the segment regarding the study sample. This failure may have meant a third of the requests for participation from Time One respondents went undelivered (personal communication, David Henry, University Office of Institutional Technology, January 2005).

Time One Collection Procedures

The Time One UNSC required about 20 minutes for participants to complete the 93-item survey. All first-year students attending Orientation were asked to take the UNSC in campus computer labs through their Orientation groups. The initial sample reflected about 83% percent of the entering first year class and about 93% percent of Orientation participants. Two-day Orientation sessions were held twice weekly from June through July, with the survey being given on day two. Those students who were unable for some reason to complete the survey online were asked to complete a paper copy while they were on campus; follow-up emails were sent to students who had not yet completed the survey by July 30, the end of Orientation, asking their participation via the Internet by August 26, 2004, prior to their arrival on campus for fall term.

In order for on-campus participants to access and complete the surveys, Student Orientation Assistants took them to campus computer labs for the survey sessions rotated over the course of the second day of a two-day Orientation. Trained undergraduate research assistants simultaneously introduced the UNSC and another, briefer, survey at the start of the session. Students then read the UNSC informed consent and entered their Directory Identification Codes and passwords to initiate the first survey. The identification code and password entry was the indication of participant informed consent for each survey. Once finished with the UNSC, participants proceeded directly to the next survey online informed consent form and again entered their Directory Identification and password to complete that related survey and its associated locator form.

The online consent form for the UNSC explained procedures to participants. Research assistants told participants that the UNSC was voluntary and confidential and

that only group data would be shared; no individual identities would be revealed. They were told that the survey was not anonymous, but that their information was for the researchers only and not part of their student records. Participants were also informed that data for the UNSC would be tracked via their Universal Identification Code (UID, a student identification number), accessed through the Directory Identification they used to initiate the survey, and that the UNSC data would be linked for research purposes to data from the University data warehouse (e.g., grade point average, campus involvement, residence hall) by the investigators using the student's UID.

Students were encouraged to participate in the survey but told their non-participation would not affect the services they would receive on campus. Additionally, they were instructed that by entering their Directory Identification Code (collected but translated to the Universal Identification) and their password, which was not collected as data but only used for participants to gain access to their accounts, they were providing their informed consent to participate in the survey and for the researchers to use their data as described in the consent forms, including using data for follow-up studies.

Times Two and Three Collection Procedures

Time Two data collection was in November 2004, weeks 11 to 13 of fall term, well past the initial 6 to 8 week time frame recognized as the most crucial transition period for entering first-year students (e.g., IOM/NRC, 2003) but prior to Thanksgiving. It was hoped that this timing would allow for social and academic integration and influence to have occurred, although not conflicting with end of term papers, final exams, and travel plans.

Collection of data for Time Three was in late February during weeks 4 and 5 of the spring term and a month following membership recruitment (i.e., rush) for both fraternities and sororities. This timing was chosen to allow the items related to the quantity and frequency of drinking alcohol during the past 4 weeks to reflect time while school was in session rather than on winter break but ahead of spring break vacations.

Times Two and Three surveys required about 10 minutes for participants to complete a survey of about 80 items (predominantly 5-point scales, with some multiple choice items) chosen specifically by this researcher for this and related studies. Items for this study were generally scattered throughout the survey rather than organized in scale related groupings in order to help reduce potential response sets. Some items were stated in a high-risk direction and some in a low risk direction; all were eventually coded for analysis such that higher scores indicated high risk. An email soliciting student participation by a specified deadline (e.g., 5 days past receipt of initial email) was sent to the initial study sample, all participants who had completed the UNSC Time One. Students who had not responded by the specified deadline were sent a follow-up reminder and encouraged to participate by a final specified date (5 days later), 10 days beyond the initial request for participation. As supported by research (McCabe et al., 2002), recommend through the pilot process, and approved by the University IRB, an email notice soliciting participation in the study by students who self-identified as African American/Black, Asian Pacific American, Latino/Latina American, and Multiracial/Biracial American was sent at Time Two after the initial request for participation. A thank you and counseling resources page was provided automatically to participants following the fall and spring surveys (Appendix F).

Opportunities for receiving incentives (e.g., both cash and prizes) were offered to students to encourage participation, including doubled incentive opportunities for students who completed the surveys by the initial specified deadline (5 days). The participants were told that the survey was one to support the doctoral dissertation of a graduate student on campus and that the study was one of campus social life and alcohol use experiences. Participants were offered the opportunity to receive a summary of results. They were further told that an executive summary of their ideas and concerns would be shared with campus administrators in order to represent student concerns and ideas about campus experiences.

Overview of Primary Statistical Method

Structural equation modeling (SEM) has been used by researchers studying college student drinking (e.g., Dowdall & Wechsler, 2002) and has been used more frequently in recent years by others studying use of alcohol and other drugs among adolescents (e.g., Stacy, Newcomb, & Bentler, 1996). Klem (2000) has contended SEM is useful with panel data, as that which was gathered in this survey, and is used routinely for that purpose. Thompson (2000) noted that many statistical procedures call for simple models that have fewer degrees of freedom, but that in SEM, models with more degrees of freedom “represent more rigorous and persuasive tests” (p. 266).

Data Analysis

Data were analyzed using measured variable structural equation modeling with EQS 6.1 (Build 85) for Windows (Bentler, 2004) and SPSS 11.0 for Windows. Descriptive statistics were developed on the data first. Then measured variable SEM was used to examine the model. Maximum likelihood estimation with standard test statistics

was used to determine model effects for each multigroup analysis. This method was expected to yield the most accurate results with small samples and the possibility of non-normal data (Savalei & Bentler, 2005). Multigroup analyses were conducted on the model, one for the five racial-ethnic groups and one for White men and White women. The model provided 275 degrees of freedom for the racial-ethnic group analysis and 110 degrees of freedom for the gender analysis of White men and White women. Lagrange multiplier tests were performed but did not indicate any theoretically meaningful changes to the model for any group, so the original model was maintained. Paths were constrained individually across groups using Microsoft Excel 2000 to test for non-invariance between groups when EQS 6.1 produced error messages on some constraints tests, disallowing an omnibus test of path constraints and requiring alternative means of

testing. The formula
$$Z = \frac{b_i - b_j}{\sqrt{SE_i^2 + SE_j^2}}$$
 was used with the

unstandardized path coefficient and its standard error to test each path between each pair of groups consecutively. Using a chi-square difference test, significant non-invariance between groups in each of the two multigroup analyses was determined.

Missing Data

There were two levels at which missing data decisions were made. One reflected the attrition from Time One to Time Two and from Time Two to Time Three. The other reflected decisions regarding how to handle missing data within the three available survey points for the three-time sample that was used in the analyses.

Listwise deletion of cases was used to eliminate participants for whom only Time One or only Time One and Time Two data were available. Listwise deletion was also

used when cases from the three-time sample had insufficient data to allow imputation based on the chosen rules. To have analyzed the data using the pairwise maximum likelihood (ML) method of analysis with approximately 75% attrition over the course of the study would likely have been problematic. Research has demonstrated that structural parameters in the model, those estimated in this study, are most subject to bias when using pairwise ML (Brown, & Muthén et al. both in Savalei & Benter, 2005). In addition, pairwise deletion would mean that the relationships of variables would be based on different cases (Kline, 1998), an unsatisfactory solution given the examination of a temporally based process with repeated measures and its contribution to subsequent behavior. Savalei and Benter found that pairwise ML did not perform well in small samples (i.e., $N=200$, $N=300$). Even at Times One and Two, most of the subgroups in the analyses would have been this small in the current study. Finally, except with large samples ($N=5,000$) the Savalei and Bentler study concluded that ML with listwise deletion was preferred and even with non-normal data.

Students who participated at all three survey times and were determined to be in one of the five racial-ethnic groups, who did not identify as international students studying in the U.S. on a student visa, and who were 17-20 years old comprised the near-final sample to be used in the ML analyses. When data were missing from this sample, a pro-rated average was provided, meaning that an average of scores from the subscale items (e.g., social norms theory personal attitudes 3 items vs. theory of planned behavior personal attitudes 3 items) for that individual participant was substituted. Using listwise deletion 11 participants who did not provide any response on a subscale were excluded from the analyses, as were the 18 participants who did not identify as one of the five

racial-ethnic groups in the study. Thus complete data were derived for all final participants ($N=837$).

The variable with the most missing data was social identity/self-categorization. Twenty-five (25) cases were missing one item, though the item varied across cases. Other variables (e.g., perceived behavioral control had 12 cases missing data for an item; intention had 9 cases missing data for an item) had fewer cases missing data. Six students provided no responses for the three items from theory of planned behavior personal attitude and 5 provided insufficient responses for their alcohol use items to impute a response for each item. Both of these last two situations appeared to be related to their likely non-drinking status as inferred from general qualitative comments about the survey items from participants who did not drink and who felt items such as these did not necessarily apply to them.

CHAPTER FOUR

RESULTS OF ANALYSES

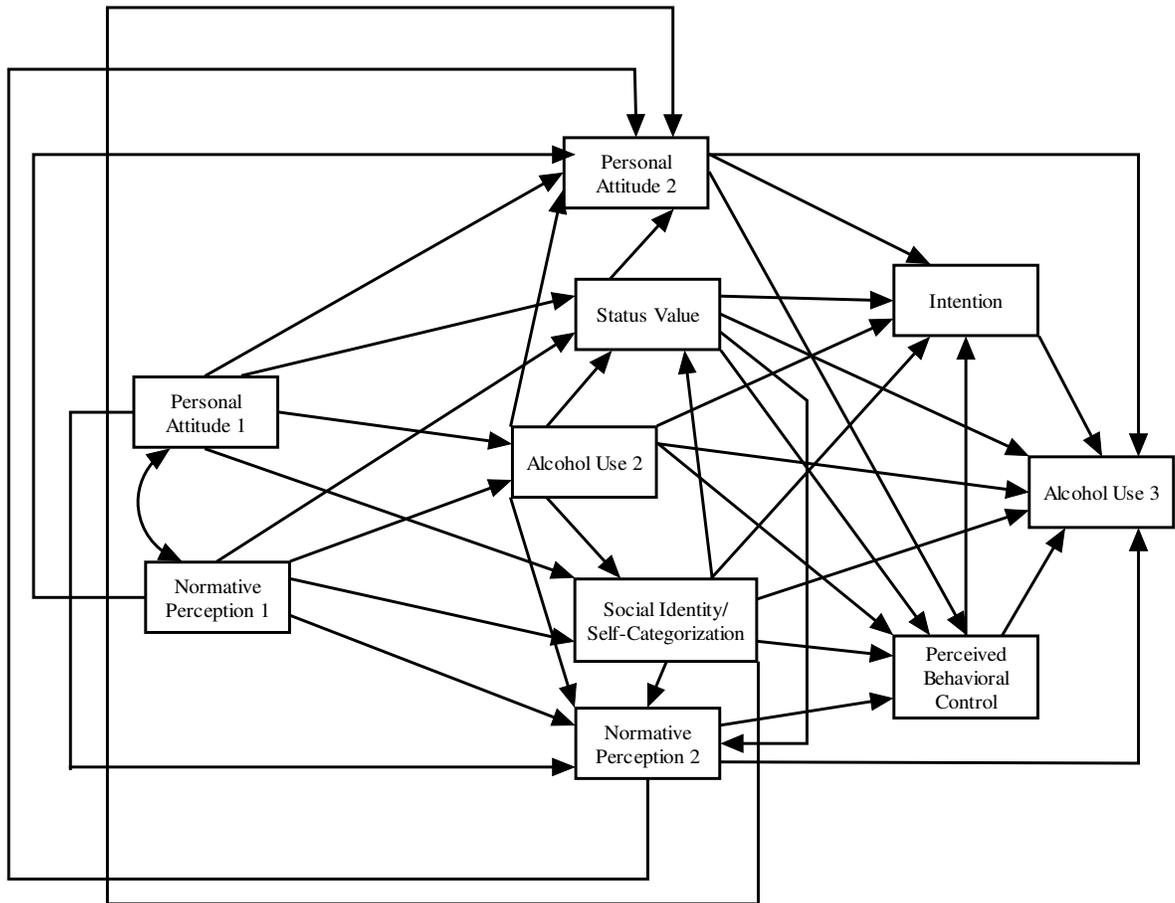
This chapter presents results from the descriptive analyses of the data from final study participants ($N=837$) for whom complete data over three time points were available after implementing missing data decisions as outlined in Chapter Three, as well results from the structural equation analysis of the path model. Models were tested in two multi-group analyses. The first analysis was of five different racial-ethnic groups of students (i.e., African American/Black, Asian Pacific American (APA), Latino-Latina American, White American and students who identified as Multiracial or Biracial American students). The second analysis was of White men and White women, the only two gender-race subgroups for whom the sample size was large enough to perform such analyses.

Recall first that the model included two exogenous variables (pre-college normative perception and pre-college personal attitude) measured at summer orientation, seven endogenous variables measured in early November fall term (i.e., alcohol use 2, status value, social identity/self-categorization, normative perception 2, personal attitude 2, perceived behavioral control, and intention), as well as one endogenous outcome variable (alcohol use 3) measured in early spring term (five weeks after Greek rush and two weeks before spring break). The model posited that the two exogenous variables covaried, and that all variables had indirect effects on all subsequent variables, in other words, that all variables after the two pre-college exogenous ones had a direct effect on the outcome variable; that social identity-self categorization directly influenced status

value; and that fall normative perception directly influenced fall personal attitudes.

Figure 4.1 recalls this model from Chapter Three.

Figure 4.1. Peer Influence Context Model for Alcohol Use Among College Students.



Final Sample Descriptive Statistics and Related Analyses

Overview-Summary

The final sample for the study included 837 students who had participated in the summer, fall, and spring survey administrations. Based on student self-identification responses, the racial-ethnic representation of the final sample for analysis was 7.2% African American/Black students; 14.4% Asian Pacific American students; 6.1% Latino/Latina American students; 65.4% White American students; and 6.5 %

Multiracial/Biracial students, comparable to the initial sample. The final sample was 36.3% men and 63.7% women, somewhat more heavily represented by women than men in relation to the initial sample. Although there were limitations regarding attrition from the original sample, some likely random due to server failure experienced by the University concurrent to Time Two data collection, the sample does appear to be racially and ethnically representative of the initial participants with the exception of participation by African American/Black men (2.6% vs. 3.3%), not uncommon in other college survey studies McCabe et al. (2002). The women's participation rate was higher than men's generally in this study, again, not uncommon in college survey studies (McCabe et al.).

Table 4.1 reflects the percentages of students on the study campus reporting any drinking in the last 4 weeks (28 days) at Time One (June and July 2004 before matriculation to the University). Drinking rates were similar across the three sub-samples, Time One only, Times One-Two only and Times One-Two-Three. Finally, the mean number of drinks typically consumed on a day when the participants drank alcohol in the last month was between two and three drinks among the waves of sub-samples for the study. Further, comparison of drinking rates of these three groups to state and national samples is made in Chapter Five and suggests that this final study sample is comparable to them.

Table 4.1

Comparison of Drinking Quantity and Frequency Among Survey Participants

Across Survey Times

Survey	5+ drinks in previous 2 weeks once or more	Drank alcohol in the last month	Mean no. drinks on a day when consumed alcohol in last month
Time One UNSC	39%	63.7%	2.72
Time One & 2 UNSC & Md social life	36.3%	63.7%	2.64
Time One, 2, & 3 UNSC & Md social life fall and spring	29%	60%	2.04

Demographics

Table 4.2 provides an overview of descriptive information about the final study sample by racial-ethnic group. It includes information about whether the student or one of the student’s parents was foreign born, for instance, in the generation status listing as well as information on parental income and educational attainment. In each of the racial-ethnic groups except for White students, a quarter or more of the students reported that they or one of their parents was foreign born, although no students on visas were included in the study. More students of color came from families earning under \$50,000 annually, and where fewer parents had at least a bachelor’s degree. More Latino/Latina students than students in other groups had consumed alcohol at age 12 or younger, and more of them had experienced intoxication at age 15 or younger. White students were most likely to have frequently consumed alcohol and to have been drunk frequently than were the

students in the other racial-ethnic groups. Spring survey responses indicated that African American/Black students and Asian Pacific American students more frequently considered themselves non-drinkers and less frequently drank to get drunk than did the students in other groups.

Table 4.2

*Demographics Table*¹

	African American/Black (7.2%) n=60	Asian Pacific American (14.6%) n=123	Latino/Latina American (6.1%) n=51	White American (65.6%) n=549	Multiracial/Biracial American (6.5%) n=54
Gender:					
<i>Men</i>	13.0%	31.7%	37.3%	38.4%	50%
<i>Women</i>	86.7%	68.3%	62.7%	61.6%	50%
Generation status: One parent foreign born or self foreign born (naturalized citizen or permanent resident)	28.3%	93.5%	49%	9%	50%
Annual parental income ²					
\$49,999 and below	16.7%	17.9%	13.7%	5.1%	13.0%
\$50,000-\$99,000	31.7%	26.8%	27.5%	19.4%	20.4%
\$100,000-\$174,999	20.0%	22.0%	26.9%	31.4%	24.1%
\$175,000 and above	6.7%	8.1%	5.9%	13.1%	14.8%
Father's education: Bachelor's and higher	61.7%	74.8%	60.8%	77%	66.7%
Mother's education: Bachelor's and higher	53.5%	61.7%	52.9%	73.8%	70.3%
Living in residence halls	93.3%	85.4%	84.3%	95.3%	96.3%
Age consumed first alcoholic beverage					
<i>Never</i>	28.3%	26.0%	25.5%	11.9%	7.4%
≤ 12 years	8.3%	8.3%	17.6%	6.0%	7.4%

	African American/ Black (7.2%) <i>n</i> =60	Asian Pacific American (14.6%) <i>n</i> =123	Latino/ Latina American (6.1%) <i>n</i> =51	White American (65.6%) <i>n</i> =549	Multiracial/ Biracial American (6.5%) <i>n</i> =54
<i>13-15 years</i>	26.7%	20.3%	25.5%	35.2%	29.7%
Age first experienced intoxication from alcohol					
<i>Never</i>	38.3%	48.0%	33.3%	17.8%	20.4%
<i>≤ 15 years</i>	13.3%	14.6%	37.3%	26.7%	18.7%
In the year prior to attending University Name, I drank alcohol frequently.	10.0%	13.9%	19.6%	27.1%	18.6%
In the year prior to attending University Name, I got drunk frequently.	8.3%	12.2%	15.7%	20.1%	13.0%
I consider myself a drinker. (spring)	15.0%	21.9%	31.3%	40.6%	22.2%
I consider myself a non-drinker. (spring)	55.9%	59.5%	41.2%	26.7%	37.1%
I drink to get drunk. (spring)	13.3%	18.7%	21.0%	33.5%	29.6%

¹ This table is repeated with additional items (e.g., summer, fall, and spring drinking patterns) in the appendices.

² For each racial-ethnic group, between 25% and 31% of student reported not knowing their parents' annual income.

Missing Data

As previously outlined in Chapter Three, listwise deletion was employed across the three surveys so that only participants with data available on most items at all three points in time were included in the analyses. Further, data for this near-final sample of participants who responded to all three surveys were examined for missing items. When enough data existed to impute responses following the method outlined in Chapter Three, this was done. In other cases, there were not enough responses from other items in a subscale or scale to allow substitution of the person's average response. Under those

conditions, the case was eliminated from analysis. Complete data were available for 837 final participants after following the rules outlined in Chapter Three for handling missing data.

Preliminary Analyses of the Data

Prior to applying SEM to analyze the path model posited in this study, a number of preliminary evaluations and analyses of the data were conducted. For each subgroup to be examined, these included determining the scale reliabilities for the items used to create each variable, presentation of mean differences between groups for each variable in the model, and outlining the correlations of the variables for each racial-ethnic group.

Scale Reliabilities

Scale reliabilities (Cronbach's α coefficients) ranged from a low of .70 for Asian Pacific American students on status value to a high of .97 for White men on intention. Table 4.3 presents scale reliabilities for the total sample, by racial-ethnic group, for White men and for White women, and for all men and all women. Scales performed similarly across all racial-ethnic groups and for men and women.

Table 4.3

Scale Reliabilities by Racial/Ethnic Group, by Gender, and by White Men, White Women

	<i>N</i>	NP1 10 ²	PA1 6	AU2 3	SV ¹ 1	SISC 17	NP2 16	PA2 6	PBC 5	IN 5	AU3 3
Total Sample	837	.83	.94	.88	.77	.81	.84	.94	.85	.95	.88
African Am/ Black	60	.72	.88	.92	.83	.76	.82	.93	.89	.94	.88
Asian Am	123	.82	.93	.83	.70	.78	.84	.92	.83	.93	.81
Latino/ Latina Am	51	.80	.94	.78	.79	.73	.86	.94	.76	.95	.83
White Am	549	.82	.94	.89	.78	.82	.82	.94	.85	.95	.89
Multi/Bi-racial Am (not Hispanic)	54	.82	.93	.83	.79	.80	.82	.92	.88	.94	.79
All Men	304	.83	.95	.86	.81	.79	.84	.95	.85	.97	.89
All Women	533	.83	.93	.89	.75	.82	.85	.93	.85	.94	.87
White Men	211	.83	.95	.88	.81	.80	.83	.96	.86	.97	.90
White Women	338	.83	.93	.89	.77	.82	.85	.92	.85	.94	.88

¹ Status value had one item to create the variable. Reliability was measured here as test-retest (fall and spring measures). All other reliabilities are reported as Cronbach's alpha coefficients.

Abbreviations: NP1 Normative perception 1; PA1 Personal attitude 1; AU2 Alcohol use 2; SISC Social identity/self-categorization; SV Status value; NP2 Normative perception 2; PA2 Personal attitude 2; PBC Perceived behavioral control; IN Intention; AU3 Alcohol use 3.

² Number of items in a scale is listed below scale abbreviation.

*Mean Differences of Variables by Group**Racial-Ethnic Group Mean Differences*

Table 4.4 presents variable means and standard deviations for the five racial-ethnic groups examined in the study, as well as significant mean differences. Mean

differences were tested using Tukey-Kramer, the default in SPSS 11.5 when there are unequal cell sizes and recommended for such circumstances (Lomax, 1998), except for Alcohol Use 2 and Alcohol Use 3. For these two variables, the Levene's test demonstrated significant heterogeneity of variance. Games-Howell, recommended in the case of significant unequal variances and acceptable for unequal cell sizes (Lomax) was employed to examine group mean differences for both alcohol use variables. African American/Black and White students had a number of significantly different means, as did Asian Pacific American and White students. For instance, all variable means except those for status value and perceived behavioral control were significantly lower for African American/Black students and for Asian Pacific American students than for White students. Variable means for Latino/Latina students were more similar to those of White students except on normative perception 1 for which Latino/Latina students had a mean significantly lower than that for White students. The only variable mean on which Multiracial/Biracial students and White students differed significantly was social identity/self-categorization; White students had a significantly higher mean on this variable. African American/Black students and Multiracial/Biracial students were significantly different in their personal attitude, with African American/Black students having a significantly lower mean. African American/Black students also had a significantly lower mean for alcohol use 2 and personal attitude 2 than Multiracial/Biracial or Latino/Latina students, and significantly lower intention than Latino/Latina students. No other variable means were significantly different in this analysis of racial-ethnic groups.

Table 4.4

Variable Means and Standard Deviations for Racial-Ethnic Groups

Variable	African Am/Black		Asian Pac Am		Latino-Latina		White American		Multiracial/Biracial	
	<i>n</i> =60		<i>n</i> =123		<i>n</i> =51		<i>n</i> =549		<i>n</i> =54	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
NP1	5.15 ^d	1.77	5.46 ^d	2.17	5.71 ^d	2.11	6.55 ^{a,b,c}	1.99	5.87	2.17
PA1	4.01 ^{d,e}	3.15	5.20 ^d	3.91	5.61	3.98	6.80 ^{a,b}	3.83	6.08 ^a	3.80
AU2 ^f	1.02 ^{c,d,e}	1.71	1.45 ^d	1.86	2.28 ^a	2.35	2.56 ^{a,b}	2.33	2.10 ^a	2.25
SV	7.53	3.40	8.42	3.29	7.69	3.05	7.51	3.71	7.13	3.90
SISC	6.91 ^d	1.44	7.37 ^d	1.57	7.50	1.35	7.82 ^{a,b,e}	1.67	7.17 ^d	1.74
NP2	6.35 ^d	1.69	6.36 ^d	1.70	6.78	1.85	7.29 ^{a,b}	1.60	6.94	1.73
PA2	3.94 ^{c,d,e}	3.64	5.33 ^d	3.92	6.21 ^a	4.59	7.37 ^{a,b}	4.04	6.30 ^a	4.03
PBC	1.33 ^b	1.89	2.41 ^a	2.35	2.09	2.19	1.93	2.00	1.51	1.75
IN	4.14 ^{c,d}	4.14	4.98 ^d	4.36	6.63 ^a	5.14	7.80 ^{a,b}	4.77	6.41	4.77
AU3 ^f	1.39 ^d	1.98	1.26 ^{d,e}	1.68	1.95	2.24	2.75 ^{a,b}	2.28	2.10 ^b	1.83

* $p < .05$ ^a significantly differs from African American/Black^b significantly differs from Asian Pacific American^c significantly differs from Latino/Latina American^d significantly differs from White American^e significantly differs from Multiracial/Biracial American^f Tukey-Kramer (default in SPSS 11.5 when unequal cell sizes) was used in all analyses of means

differences except those for AU 2 and AU 3. For those two variables Games-Howell was used because of significant heterogeneity of variance identified through the Levene's test.

Abbreviations: NP1 Normative perception 1; PA1 Personal attitude 1; AU2 Alcohol use 2; SISC Social identity/self-categorization; SV Status value; NP2 Normative perception 2; PA2 Personal attitude 2; PBC Perceived behavioral control; IN Intention; AU3 Alcohol use 3.

White Men and White Women

Mean differences on the variables between White men and White women are presented in Table 4.5. *T*-tests for independent samples were used to compare mean differences between White men and White women, treating each variable as its own outcome. After applying results of the Levene's test for homogeneity of variance, there was one mean that was significantly different between these two groups. White men had a significantly lower mean for social identity/self-categorization than did White women. Variance was not significantly different for social identity/self-categorization, but was significantly different for personal attitude 1 and personal attitude 2, for drinking intention and for alcohol use 3; however, means for these other variables demonstrated no significant differences using the appropriate evaluation.

Table 4.5

Variable Means and Standard Deviations for White Men and White Women

Variable	White Men		White Women	
	<i>n</i> =211		<i>n</i> =338	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
NP1	6.55	2.05	6.55	1.95
PA1	6.62	4.04	6.92	3.70
AU2	2.63	2.58	2.53	2.17
SV	7.81	3.64	7.32	3.75
SISC ^a	7.64	1.61	7.93	1.70
NP2	7.26	1.58	7.31	1.62
PA2	7.59	4.41	7.23	3.79
PBC	1.97	2.11	1.91	1.93
IN	7.75	5.22	7.83	4.47
AU3	2.94	2.63	2.62	2.03

p < .05

^a White men had a significantly lower mean for social identity/self-categorization than White women did.

Abbreviations: NP1 Normative perception 1; PA1 Personal attitude 1; AU2 Alcohol use 2; SISC Social identity/self-categorization; SV Status value; NP2 Normative perception 2; PA2 Personal attitude 2; PBC Perceived behavioral control; IN Intention; AU3 Alcohol use 3.

Correlations Among Variables by Racial-Ethnic Group

Tables 4.6 to 4.14 present the correlations between a model variable and all subsequent model variables in comparative form by racial-ethnic group. Intention

(Table 4.14), alcohol use 2 (Table 4.8), and personal attitude at Time Two (PA2) (Table 4.12) were significantly correlated with subsequent variables most broadly among the groups.

Correlations of Variables with Normative Perception 1 by Racial-Ethnic Group

Table 4.6 illustrates that the correlation of normative perception at Time One (NP1) and status value was significant only for White students; normative perception 1 and perceived behavioral control (PBC) were not significantly correlated for African American/Black and Latino/Latina American students; for Multiracial/Biracial American students normative perception 1 was not significantly correlated with social identity/self-categorization.

Table 4.6

Comparative Correlations of Normative Perceptions 1 with Subsequent Model Variables

	NP1	PA1	AU2	SV	SISC	NP2	PA2	PBC	INT	AU3
African Am/Blk		.63**	.53**	.12	.34**	.45**	.61**	.08	.61**	.63**
APA		.66**	.48**	.05	.34**	.58**	.50**	.21**	.53**	.41**
Latino/Latina Am		.60**	.59**	.20	.28**	.62**	.60**	.26	.63**	.40**
White Am		.60**	.49**	.23**	.31**	.61**	.50**	.22**	.51**	.49**
Bi/Multiracial Am		.59**	.67**	-.04	.23	.46**	.51**	.46**	.41**	.54**

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

Correlations of Variables with Personal Attitude 1 by Racial-Ethnic Group

Table 4.7 represents the correlation of personal attitude 1 with subsequent model variables across groups. Perceived behavioral control for African American/Black students was not significantly correlated with personal attitude 1. For Multiracial/Biracial

American students, personal attitude 1 was not significantly correlated with alcohol use 2, status value, or normative perception 2. Status value was not correlated significantly with personal attitude 1 for Asian Pacific American students.

Table 4.7

Comparative Correlations of Personal Attitudes 1 with Subsequent Model Variables

	PA1	AU2	SV	SISC	NP2	PA2	PBC	INT	AU3
African Am/Blk		.49**	.28*	.29*	.30*	.78**	.10	.75**	.55**
APA		.70**	.02	.48**	.50**	.73**	.29**	.79**	.58**
Latino/Latina Am		.66**	.34**	.49**	.62**	.83**	.31**	.76**	.60**
White Am		.68**	.19**	.42**	.41**	.79**	.22**	.77**	.64**
Bi/Multiracial Am		.67	-.03	.29*	.17	.69**	.46**	.65**	.70**

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

Correlations of Variables with Alcohol Use 2 by Racial-Ethnic Group

In Table 4.8 it is clear that alcohol use 2 was significantly correlated with all variables for all groups except in the case of status value. A significant correlation between status value and alcohol use 2 existed only for Latino/Latina and White American students.

Table 4.8

Comparative Correlations of Alcohol Use 2 with Subsequent Model Variables

	AU2	SV	SISC	NP2	PA2	PBC	INT	AU3
African Am/Blk		.15	.46**	.64**	.75**	.37**	.76**	.85**
APA		-.05	.39**	.60**	.76**	.20*	.82**	.76**
Latino/Latina Am		.31*	.56**	.61**	.80**	.31*	.87**	.78**
White Am		.20**	.51**	.53**	.78**	.23**	.81**	.79**
Bi/Multiracial Am		.19	.50**	.48**	.82**	.36**	.78**	.87**

* $p < .05$ ** $p < .01$ *Correlations of Variables with Status Value by Racial-Ethnic Group*

Status value was mixed in its relation to subsequent model variables. It significantly correlated with all subsequent model variables for White American students; it was significantly correlated only with social identity/self-categorization for African American/Black, Asian Pacific American, and Multiracial/Biracial American students. Status value was correlated significantly with social identity/self-categorization, personal attitude 2, intention and alcohol use 3 for Latino/Latina American students as illustrated in Table 4.9.

Table 4.9

Comparative Correlations of Status Value with Subsequent Model Variables

	SV	SISC	NP2	PA2	PBC	INT	AU3
African Am/Blk		.30*	.13	.22	.11	.22	.23
APA		.28**	-.10	-.04	.05	.02	.04
Latino/Latina Am		.48**	.27	.28*	.03	.30*	.29*
White Am		.44**	.18**	.20**	.20**	.22**	.23**
Bi/Multiracial Am		.36**	.17	.10	-.14	.06	.05

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

Correlations of Variables with Social Identity/Self-Categorization by Racial-Ethnic Group

Social identity/self-categorization is highlighted in Table 4.10. This variable was significantly correlated with all subsequent variables in the model with two exceptions. Perceived behavioral control for Asian Pacific American, Latino/Latina American, and Multiracial/Biracial American students was not significantly correlated with social identity/self-categorization. Also, normative perception 2 was not significantly correlated with social identity/self-categorization for Latino/Latina or for Multiracial/Biracial American students.

Table 4.10

Comparative Correlations of Social Identity/Self-Categorization with Subsequent Model Variables

	SISC	NP2	PA2	PBC	INT	AU3
African Am/Blk		.38**	.39**	.34**	.51**	.51**
APA		.31**	.55**	.16	.51**	.36**
Latino/Latina Am		.16	.61**	.19	.58**	.56**
White Am		.30**	.54**	.19**	.57**	.50**
Bi/Multiracial Am		.20	.58**	-.03	.61**	.45**

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

Correlations of Variables with Normative Perception 2 by Racial-Ethnic Group

Normative perception 2 (Table 4.11) was significantly correlated with most subsequent variables across all groups. However, it was significantly correlated with perceived behavioral control only for White American students. For Multiracial/Biracial American students, normative perception 2 was not correlated significantly with intention either.

Table 4.11

Comparative Correlations of Normative Perceptions 2 with Subsequent Model Variables

	NP2	PA2	PBC	INT	AU3
African Am/Blk		.47**	.15	.50**	.61**
APA		.56**	.04	.60**	.51**
Latino/Latina Am		.62**	.18	.63**	.46**
White Am		.47**	.15**	.49**	.46**
Bi/Multiracial Am		.30*	.07	.24	.28**

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

Correlations of Variables with Personal Attitude 2 by Racial-Ethnic Group

Personal attitude 2 was significantly correlated with all subsequent variables in the model, perceived behavioral control, intention and alcohol use 3, across all groups with one exception. It was not significantly correlated with perceived behavioral control for Latino/Latina students, as can be seen in Table 4.12.

Table 4.12

Comparative Correlations of Personal Attitudes 2 with Subsequent Model Variables

	PA2	PBC	INT	AU3
African Am/Blk		.36**	.92**	.78**
APA		.24**	.86**	.75**
Latino/Latina Am		.20	.93**	.72**
White Am		.26**	.90**	.70**
Bi/Multiracial Am		.30**	.91**	.79**

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

Correlations of Variables with Perceived Behavioral Control by Racial-Ethnic Group

Perceived behavioral control (Table 4.13) was not significantly correlated with either intention or alcohol use 3 for Latino/Latina students. For Asian Pacific American students it was not significantly correlated with alcohol use 3. On the other hand, for Multiracial/Biracial students it was not significantly correlated with intention but was significantly correlated with alcohol use 3.

Table 4.13

Comparative Correlations of Perceived Behavioral Control with Subsequent Model

Variables

	PBC	INT	AU3
African Am/Blk		.38**	.35**
APA		.23**	.12
Latino/Latina Am		.17	.21
White Am		.27**	.25**
Bi/Multiracial Am		.19	.28**

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

Correlations of Intention with Alcohol Use 3 by Racial-Ethnic Group

For all racial-ethnic groups in the study, intention was significantly correlated with alcohol use 3, as highlighted in Table 4.14.

Table 4.14

Comparative Correlations of Intentions with Subsequent Model Variables

	INT	AU3
African Am/Blk		.79**
APA		.68**
Latino/Latina Am		.76**
White Am		.73**
Bi/Multiracial Am		.83**

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

Correlations Among Variables by Gender for White Men and White Women

Contrary to the differences found in variable correlations among racial-ethnic groups, with some significant relationships and others not between groups, for White men and White women, all variables were significantly correlated ($p < .01$) with each other for both groups except for three ($p < .05$) for White men: normative perception 2 and perceived behavioral control, normative perception 1 and status value, and normative perception 2 and status value. The correlations for all variables for White men and White women (bottom of diagonal) are illustrated in Table 4.15.

Table 4.15

Correlations of Model Variables for White Students by Gender

	Men									
	NP1	PA1	AU2	SV	SISC	NP2	PA2	PBC	INT	AU3
NP1	—	.63**	.56**	.16*	.31**	.60**	.53**	.19**	.53**	.59**
PA1	.58**	—	.74**	.21**	.44**	.42**	.84**	.26**	.81**	.70**
AU2	.44**	.63**	—	.26**	.55**	.58**	.78**	.31**	.82**	.85**
SV	.28**	.18**	.16**	—	.46**	.14*	.24**	.21**	.25**	.22**
SISC	.31**	.41**	.50**	.44**	—	.26**	.53**	.19**	.56**	.55**
NP2	.62**	.41**	.51**	.21**	.33**	—	.45**	.14*	.49**	.53**
PA2	.48**	.76**	.76**	.16**	.56**	.48**	—	.27**	.91**	.70**
PBC	.24**	.19**	.17**	.19**	.20**	.163**	.25**	—	.31**	.35**
INT	.49**	.75**	.80**	.20**	.58**	.49**	.90**	.25**	—	.75**
AU3	.41**	.59**	.74**	.23**	.51**	.43**	.71**	.16**	.72**	—
Women										

Note. Men above the diagonal

* $p < .05$

** $p < .01$

In sum, the correlations by racial-ethnic group and between men and women for White students demonstrated significant relationships between many variables across groups as well as a number of non-significant relationships for one or several groups. Exploring further how the variables relate to one another and for whom was the next step in the study.

The Model by Race

Overview

Overall fit indices for the initial model were acceptable for each of the racial-ethnic groups in the study; the Lagrange Multiplier test made no theoretically relevant recommendations for adding or removing paths to improve model fit. For White American students and Multiracial/Biracial American students, the model demonstrated more direct and indirect significant paths to alcohol use behavior than for other racial-ethnic groups studied. Alcohol use behavior explained by the model varied substantially from a high of nearly 92% for African American/Black students to a low of just over 60% for Asian Pacific American students, suggesting a model with reasonably strong explanatory ability. Tests of model invariance across groups yielded many non-significant relationships as well as a number of paths that were significantly non-invariant (differed significantly) between two or more groups, primarily paths involving normative perception, behavior, attitude and social-identity/self-categorization.

This section of the chapter proceeds first to present data normality characteristics. Next fit indices and standardized absolute covariance residuals are presented. Following is a presentation of the final endogenous variable, alcohol use behavior at Time Three (AU3) whose variance is explained by the model for each racial-ethnic subgroup. Then

the chapter addresses and presents by racial-ethnic group the direct, indirect, and total effects of variables in the model on all endogenous variables. A summary of comparison of variable effects between racial-ethnic groups follows. A figure illustrating significant paths for each group is provided following presentation of the model effects for that group. Results of the tests of invariance across groups and any significant differences between them are outlined next, followed by a related figure.

Normality Characteristics

Using EQS 6.1 (Build 85) (Bentler, 2004), path analysis was conducted via measured variable structural equation modeling. Preliminary analysis of the data through EQS provided a Mardia's coefficient (used to examine distributional symmetry) for each group and a more "practical" normalized estimate (Bentler, p. 110). These statistics are presented in Table 4.16. In the event that the measures were unsatisfactory, the EQS 6.1 program listed cases contributing most to multivariate kurtosis for possible deletion. The program automatically performed the Bonett-Woodward-Randall test on three subsamples (African American/Black, Multiracial/Biracial and Latino/Latina) because of their small size ($N < 100$). In the case of Latino/Latina American and Multiracial/Biracial American students, the original normalized estimates and Bonett-Woodward-Randall test demonstrated no need to delete cases, as there was no significant excess kurtosis indicative of non-normality (Bentler, 2004). The initial normalized estimate for the African American/Black students indicated a need to delete the first five cases identified by EQS; this had to be done again, as well, for a total of 9 cases deleted from the final analysis. At that point, the normalized estimate was at an absolute value 3 or less, demonstrating no significant excess kurtosis.

The normalized estimate for Asian Pacific American students was below the 5 or 6 at which Bentler (2004) suggested non-normality might start to become a problem. No cases were deleted from this group. For the White American subgroup, the initial normalized estimate demonstrated a need to eliminate the five cases suggested. When the measures were still higher than ideal, another 5 were deleted. When the improvement seemed to diminish, no more cases were deleted. A total of 10 cases were deleted from this group.

The White American group still had a normalized estimate beyond the 5 or 6 suggested by Bentler (2004) as an outside value for when problems might start to occur. However, this was not expected to be problematic in the analysis. Specifically, Lei and Lomax (2005) in their study of the effects of non-normality in SEM concluded “the usual interpretation of SEM parameters estimates can be accepted, even under the severe nonnormality conditions” (p. 16). Lei and Lomax also concluded that “nonnormality conditions have almost no effect on the standard errors of the parameter estimates regardless of the sample size [$N=100$ or more] and estimation methods” (p. 16). Even with the higher than preferred normalized estimates for Asian Pacific American and White American students in the current study, the Lei and Lomax finding assures the acceptability of using the standard test statistics rather than needing to default to the robust test statistics; it also indicates permission to trust tests of invariance of paths between groups. The separate subsequent analysis of White men and White women reflected normalized estimates for both groups within the less concerning range of under 5 or 6, with the deletion of 15 cases, 5 for men and 10 for women as is presented later for that section.

Table 4.16

Multivariate Kurtosis

	Mardia's Coefficient (G ₂ , P)	Normalized Estimate	No. Cases Deleted
AfAm/Blk ^a	-2.2130	-.5101	9
AsAm	12.3478	4.4198	0
LatAm ^a	-1.3854	-.3193	0
WhiteAm	12.0969	9.0643	10
MRBRAm ^a	-5.2038	-1.2342	0

^aThe Bonett-Woodward-Randall test showed no significant excess kurtosis indicative of non-normality. This test is performed automatically by EQS 6.1 (Build 85) on small samples.

Model Fit Among Racial-Ethnic Groups

For each racial-ethnic group in the analysis, the model fit was satisfactory. No changes were made to the model. As is standard practice in SEM (Bollen, 1989; Hu & Bentler, 1999; Kline, 1998), several types of fit indices are evaluated (Table 4.17) and covariance residuals are presented (Table 4.18) in determining the acceptability of the model fit. Several incremental fit indices and one absolute fit index are presented here, as well as a brief discussion of the residuals.

The SRMR, standardized root mean squared residual, is an absolute fit index which examines the observed versus model implied relations and which is based on the standardized average covariance residuals (Kline, 1998). When the SRMR value is very small, the model “fits the data very well, regardless of what other measures of fit may

imply” (Bentler, 2004, p. 115). For all groups in the analysis the data-model fit using the SRMR was satisfactory ($<.08$) as required (Hu & Bentler, 1999) for all groups, suggesting acceptable model-data fit across them.

Two fit indices presented here are incremental, meaning they are evaluations of the model under investigation versus a null model (Kline, 1998). The NFI, normed fit index, reflects the improvement of the researcher’s model over a null model, or a model in which no relationships between variables are hypothesized (Kline). The CFI, comparative fit index, is less influenced by sample size than the NFI (Kline). Both of these measures vary between 0 and 1. The CFI exceeded the required .95 (Hu & Bentler, 1999) for all groups, suggesting acceptable model-data fit for each. The NFI was acceptable as well at $>.90$ for all groups (Kline). The key fit indices, the NFI, CFI and SRMR, were in the acceptable range for all groups in the analysis, suggesting a satisfactory model-data fit and a minimizing of Type I or Type II error (Hu & Bentler, 1999). The CFI and NFI are more robust than chi-square with non-normal data so in this circumstance were chosen because of that (Lei & Lomax, 2005). The NFI was strongest for White students, the CFI for White and Latino/Latina American students, and the SRMR for White students. Although there is no standard answer regarding what is a good model fit, having several acceptable fit indices suggests a satisfactory model fit (Hu & Bentler).

Table 4.17

Model Fit Indices by Racial-Ethnic Group

Group	NFI	CFI	SRMR
African Am/Black	.966	.976	.023
Asian Pacific American	.968	.974	.026
Latino-Latina Am	.978	.992	.026
White American	.992	.994	.012
Multi/Biracial Am	.969	.981	.034

Table 4.18 presents the standardized covariance residuals. When these standardized covariance residuals are small and evenly distributed, it suggests the model fits the data “very well” (Bentler, 2004, p. 115).

Table 4.18

Residuals by Racial-Ethnic Group

Group	Avg. Absolute Covariance Residual Standardized	Avg. Absolute Off-Diagonal Covariance Residual Standardized
AfAm/Blk	.0060	.0073
AsAm	.0069	.0085
LatAm	.0067	.0082
WhAm	.0039	.0047
MrBrAm	.0092	.0112

Direct, Indirect, and Total Variable Effects by Racial-Ethnic Group

The following sections present the direct, indirect and total effects of the variables in the model by racial-ethnic group. Presentation begins with the effects of exogenous and endogenous variables on the final endogenous variable, alcohol use 3 (AU3), and proceeds in reverse order to the first endogenous variable, alcohol use 2 (AU2). Effects for each racial-ethnic group are presented separately first. Tables 4.19 to 4.23 outline the standardized parameter estimates, the direct, indirect, and total effects for variables in each of the five racial-ethnic groups, as well as the explained variance (R^2) of each endogenous variable.

Standardized Effect Estimates of Model Variables for African American/Black Students

As presented in Table 4.19 significant total effects for any model variable in the study were derived from five key sources for African American/Black students: normative perception 1, personal attitude 1, personal attitude 2, alcohol use 2, and social identity/self-categorization. Except for personal attitude 2, these same variables were the sources of significant direct effects in the model for this group. Only the two exogenous variables and alcohol use 2 provided significant indirect effects for any variable in the model for African American/Black students. The standardized effects for variables in the model for African American/Black students are presented in Table 4.19 after the direct, indirect and total effects on each endogenous variable are summarized.

Table 4.19
Standardized Effect Estimates for Variables in the Model for African Am/Black Students

Variables	Direct	Indirect	Total
On Alcohol Use 3 ($R^2 = .917$)			
Normative Perception 1	—	.296*	.296*
Personal Attitude 1	—	.420*	.420*
Alcohol Use 2	.767*	.119*	.886*
Status Value	-.019	-.009	-.028
Social Id/Self-Cat	.066	-.002	.065
Normative Perception 2	.027	.008	.035
Personal Attitude 2	.233	-.049	.185*
PBC	-.031	.001	-.030
Intention	-.049	—	-.049
On Intention ($R^2 = .905$)			
Normative Perception 1	—	.257*	.257*
Personal Attitude 1	—	.581*	.581*
Alcohol Use 2	.138	.429*	.567*
Status Value	-.026	-.055	-.081
Social Id/Self-Cat	.111*	.030	.141*
Normative Perception 2	.040	.043	.083
Personal Attitude 2	.772*	-.009	.762*
PBC	-.025	—	-.025
On Perceived Behavioral Control ($R^2 = .283$)			
Normative Perception 1	—	.167	.167
Personal Attitude 1	—	.269*	.269*
Alcohol Use 2	.089	.254	.343*
Status Value	-.121	-.029	-.150
Social Id/Self-Cat	.147	-.018	.128
Normative Perception 2	.014	.021	.036
Personal Attitude 2	.373	—	.373
On Personal Attitude 2 ($R^2 = .852$)			
Normative Perception 1	.054	.171*	.225*
Personal Attitude 1	.544*	.133	.677*
Alcohol Use 2	.401*	.072	.472*
Status Value	-.081	.002	-.078
Social Id/Self-Cat	.061	-.015	.045
Normative Perception 2	.057	—	.057
On Normative Perception 2 ($R^2 = .538$)			
Normative Perception 1	.226	.230*	.456*
Personal Attitude 1	-.324*	.302*	-.022
Alcohol Use 2	.669*	.055	.724*
Status Value	.038	—	.038
Social Id/Self-Cat	.152	.012	.164
On Social Identity/Self-Categorization ($R^2 = .241$)			
Normative Perception 1	.104	.115	.219
Personal Attitude 1	.063	.146	.209
Alcohol Use 2	.383*	—	.383*
On Status Value ($R^2 = .180$)			
Normative Perception 1	-.144	.005	-.140
Personal Attitude 1	.408*	-.015	.394*
Alcohol Use 2	-.207	.118	-.090
Social Id/Self-Cat	.308*	—	.308*
On Alcohol Use 2 ($R^2 = .386$)			
Normative Perception 1	.302*	—	.302*
Personal Attitude 1	.382*	—	.382*

$p < .05$

Effects On Alcohol Use at Time Three (AU3)

Of the two exogenous and seven endogenous variables posited to predict alcohol use at Time Three, four produced significant total effects for this group, including one significant direct and three significant indirect effects. A fourth was significant only in total effects.

Direct effects. The sole direct contributor to alcohol use 3 in the model was alcohol use 2 ($\beta = .767$). Although not significant in direct effect, only in total effect, personal attitude 2 provided the next greatest source of influence ($\beta = .233$). Social identity/self-categorization ($\beta = .066$) and normative perceptions 2 ($\beta = .027$) had non-significant but positive direct effects on alcohol use 3, but intention ($\beta = -.049$), perceived behavioral control ($\beta = -.031$) and status value ($\beta = -.019$) were non-significant and negative in direct effect.

Indirect effects. Significant indirect effects derived from normative perception 1 ($\beta = .296$), personal attitude 1 ($\beta = .420$), alcohol use 2 ($\beta = .119$). Other non-significant indirect effects came from two positive sources, perceived behavioral control ($\beta = .001$) and normative perception 2 ($\beta = .008$), as well as several negative ones, status value ($\beta = -.009$), social identity/self-categorization ($\beta = -.002$) and personal attitude 2 ($\beta = -.049$).

Total effects. There were four sources of significant total effects on alcohol use 3: normative perception 1 ($\beta = .296$), personal attitude 1 ($\beta = .420$), alcohol use 2 ($\beta = .886$), and personal attitude 2 ($\beta = .185$). Social identity/self-categorization, though not significant, provided the next greatest source of influence ($\beta = .065$), along with intention ($\beta = -.049$). Although non-significant, two other variables were inversely

predictive of greater alcohol use 3, namely status value ($\beta = -.028$) and perceived behavioral control ($\beta = -.030$), but normative perception 2 ($\beta = .035$) positively contributed to it.

Effects On Intention (IN)

Direct effects. Sources of significant direct effects on intention were social identity/self-categorization ($\beta = .111$) and personal attitude 2 ($\beta = .772$). Two non-significant effects were negatively predictive of intention, perceived behavioral control ($\beta = -.025$) and status value ($\beta = -.026$). Normative perception 2 ($\beta = .040$) provided a positive but non-significant effect on intention.

Indirect effects. Significant indirect effects derived from normative perception 1 ($\beta = .257$), personal attitude 1 ($\beta = .581$), and alcohol use 2 ($\beta = .429$). Other positive effects, though non-significant, came from social identity/self-categorization ($\beta = .030$) and normative perception 2 ($\beta = .043$). Negative effects were from status value ($\beta = -.055$) and personal attitude ($\beta = -.009$).

Total effects. The five significant and positive sources of total effects on intention for African American/Black students included personal attitude 2 ($\beta = .762$), personal attitude 1 ($\beta = .581$), alcohol use 2 ($\beta = .567$), normative perception 1 ($\beta = .257$) and social identity/self-categorization ($\beta = .141$). Normative perception 2 ($\beta = .083$) provided additional but non-significant total effects, but status value ($\beta = -.081$) and perceived behavioral control ($\beta = -.025$) provided non-significant negative total effects.

Effects On Perceived Behavioral Control (PBC)

Direct effects. For African American/Black students no significant direct effects on perceived behavioral control were found. Positive contributions to perceived

behavioral control derived from personal attitude 2 ($\beta = .373$), social identity/self-categorization ($\beta = .147$), alcohol use 2 ($\beta = .089$) and normative perception 2 ($\beta = .014$), yet status value ($\beta = -.121$) was found to be inversely related to lack of perceived behavioral control.

Indirect effects. Significant indirect effects on perceived behavioral control came from personal attitude 1 ($\beta = .269$). Other positive effects included normative perceptions 1 ($\beta = .167$), alcohol use 2 ($\beta = .254$), and normative perceptions 2 ($\beta = .021$). Again, status value ($\beta = -.029$) contributed negatively to perceived behavioral control, as did social identity/self-categorization ($\beta = -.018$).

Total effects. Personal attitude 1 ($\beta = .269$) and alcohol use 2 ($\beta = .323$) provided significant positive total effects on perceived behavioral control. Personal attitude 2 ($\beta = .373$) and normative perceptions 1 ($\beta = .167$) as well as social identity/self-categorization ($\beta = .128$) and normative perceptions 2 ($\beta = .036$) had non-significant positive effects. Negative effects were derived from status value ($\beta = -.150$).

Effects On Personal Attitude 2 (PA2)

Direct effects. Two sources provided significant direct effects on personal attitude 2, specifically personal attitude 1 ($\beta = .544$) and alcohol use 2 ($\beta = .401$). Other positive sources of direct effects were normative perception 1 ($\beta = .054$), normative perception 2 ($\beta = .057$) and social identity/self-categorization ($\beta = .061$). Status value ($\beta = -.081$) was negatively predictive of personal attitude 2.

Indirect effects. Of the five variables posited to have an indirect effect on personal attitude 2, only normative perception 2 ($\beta = .171$) had a significant one for African American/Black students. Other positive sources of influence were personal

attitude 1 ($\beta = .133$), alcohol use 2 ($\beta = .072$), and status value ($\beta = .002$). Social identity/self-categorization ($\beta = -.015$) had a non-significant but negative effect.

Total effects. Normative perception 1 ($\beta = .225$), personal attitude 1 ($\beta = .677$) and alcohol use 2 ($\beta = .472$) each had significant total effects on personal attitude 2. Normative perception 2 ($\beta = .057$) and social identity/self-categorization ($\beta = .045$) had positive total effects, and status value ($\beta = -.078$) had a negative total effect.

Effects On Normative Perception 2 (NP2)

Direct effects. Alcohol use 2 ($\beta = .669$) had a significant positive direct effect on normative perception 2, although personal attitude 1 ($\beta = -.324$) had a significant negative effect on normative perception 2. Normative perception 1 ($\beta = .226$) provided a positive direct effect on normative perception 2, as did both social identity/self-categorization ($\beta = .152$) and status value ($\beta = .038$).

Indirect effects. Both normative perception 1 ($\beta = .230$) and personal attitude 1 ($\beta = .302$) provided significant positive indirect effects on normative perception 2. Non-significant indirect effects derived from alcohol use 2 ($\beta = .055$) and social identity/self-categorization ($\beta = .012$).

Total effects. Two significant sources of total effects on normative perception 2 were normative perception 1 ($\beta = .456$) and alcohol use 2 ($\beta = .724$). Positive total but non-significant effects also derived from status value ($\beta = .038$) and social identity/self-categorization ($\beta = .164$), with non-significant negative total effects from personal attitude 1 ($\beta = -.022$).

Effects On Social Identity/Self-Categorization (SISC)

Direct effects. Alcohol use 2 ($\beta = .383$) contributed the only significant direct effect to social identity/self-categorization of the three variables hypothesized in this way. Normative perception 1 ($\beta = .104$) and personal attitude 1 ($\beta = .063$) were positive but non-significant in their effects.

Indirect effects. No significant indirect sources of influence were found. However, both normative perception 1 ($\beta = .115$) and personal attitude 1 ($\beta = .146$) provided positive non-significant effects on social identity/self-categorization.

Total effects. Alcohol use 2 ($\beta = .383$) provided the only significant source of total effects on social identity/self-categorization, although normative perception 1 ($\beta = .219$) and personal attitude 1 ($\beta = .209$) also contributed positively.

Effects On Status Value (SV)

Direct effects. Of the four direct sources of influence hypothesized to predict status value, two had positive and significant effects, personal attitude 1 ($\beta = .408$) and social identity/self-categorization ($\beta = .308$). Normative perception 1 ($\beta = -.144$) and alcohol use 2 ($\beta = -.207$) were negative and non-significant in their effects.

Indirect effects. No significant sources of indirect influence on status value were found. Alcohol use 2 ($\beta = .118$) and normative perception 1 ($\beta = .005$) provided positive indirect effects, and personal attitude 1 ($\beta = -.015$) negative indirect effects.

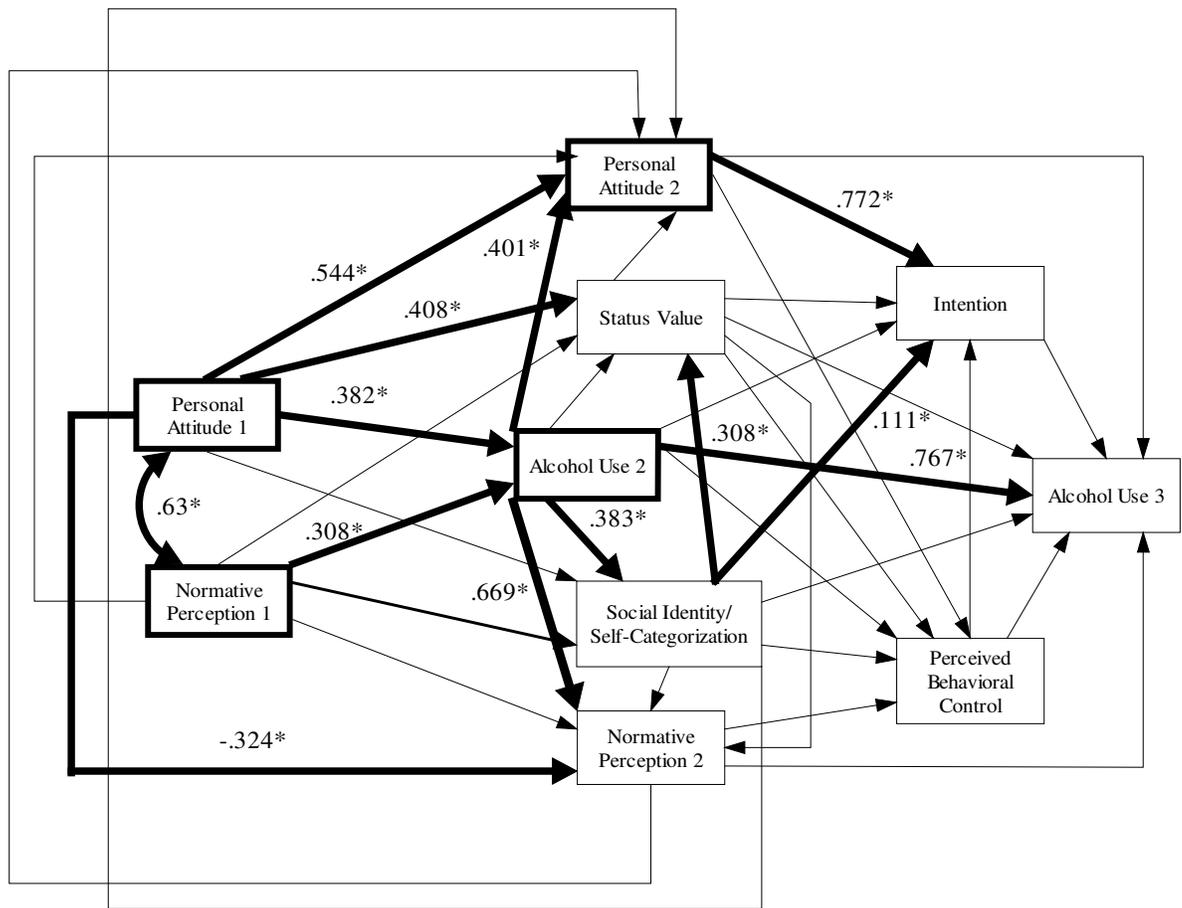
Total effects. Two variables had significant total effects on status value, personal attitude 1 ($\beta = .394$) and social identity/self-categorization ($\beta = .308$). The other two sources, normative perception 1 ($\beta = -.140$) and alcohol use 2 ($\beta = -.090$) were negative and non-significant in their total effects.

Effects On Alcohol Use 2 (AU2)

Total and direct effects. As the initial endogenous variable in the model, alcohol use 2 had only direct influences posited to predict it. Both exogenous variables, normative perception 1 ($\beta = .302$) and personal attitude 1 ($\beta = .382$), had significant positive effects on alcohol use 2.

Figure 4.2 illustrates the significant direct effects of variables in the model on each subsequent variable for African American/Black students. Significant direct effects in the model for this group derived from normative perception 1, personal attitude 1, alcohol use 2, social identity/self-categorization, and personal attitude 2.

Figure 4.2. Model for African American/Black Students.



* $p < .05$

Note. All coefficients noted are significant at the .05 level (bold lines). All coefficients are standardized. Variables contributing significant positive total effects to alcohol use 3 in the model are bolded.

Standardized Effect Estimates of Model Variables for Asian Pacific American Students

Among Asian Pacific American students in the study, two variables most frequently offered significant total effects to variables in the model, personal attitude 1 and alcohol use 2. Only these two variables provided significant total effects to alcohol use 3. Alcohol use 2 also provided the sole significant direct effects and personal attitude 1 provided the sole indirect effects on the outcome variable. Personal attitude 1 or alcohol use 2 or both were also significant in total effects for all endogenous variables.

Additionally, social identity/self-categorization was significant in total effects for both personal attitude 2 and status value. Normative perception 1 offered total effects to normative perception 2, and normative perception 2 in turn to drinking intention among Asian Pacific American students.

Significant direct effects derived from alcohol use 2, personal attitude 1 and personal attitude 2, and social identity/self-categorization. Also, normative perception 1 had a significant direct effect on normative perception 2. The significant indirect effects derived from personal attitude, alcohol use 2 and social identity/self-categorization. The standardized effects for variables in the model for Asian Pacific American students are presented in Table 4.20 after the direct, indirect and total effects on each endogenous variable are summarized.

Table 4.20

Standardized Effect Estimates for Variables in the Model for Asian Pacific American Students

Variables	Direct	Indirect	Total
On Alcohol Use Time Three ($R^2 = .601$)			
Normative Perception 1	—	.071	.071
Personal Attitude 1	—	.517*	.517*
Alcohol Use 2	.614*	.102	.716*
Status Value	.073	-.014	.059
Social Id/Self-Cat	.007	.056	.063
Normative Perception 2	.049	.027	.076
Personal Attitude 2	.077	.035	.113
PBC	-.052	.002	-.050
Intention	.088	—	.088
On Intention ($R^2 = .815$)			
Normative Perception 1	—	.084	.084
Personal Attitude 1	—	.635*	.635*
Alcohol Use 2	.345*	.302*	.647*
Status Value	.057	-.058	-.001
Social Id/Self-Cat	.034	.144*	.178*
Normative Perception 2	.086	.049	.136*
Personal Attitude 2	.531*	.005	.536*
PBC	.023	—	.023
On Perceived Behavioral Control ($R^2 = .080$)			
Normative Perception 1	—	-.055	-.055
Personal Attitude 1	—	.218*	.218*
Alcohol Use 2	.114	.034	.149
Status Value	.036	-.003	.033
Social Id/Self-Cat	.033	.058	.091
Normative Perception 2	-.167	.023	-.144
Personal Attitude 2	.232	—	.232
On Personal Attitude 2 ($R^2 = .704$)			
Normative Perception 1	-.024	.072	.047
Personal Attitude 1	.295*	.401*	.696*
Alcohol Use 2	.406*	.085	.491*
Status Value	-.081	-.011	-.092
Social Id/Self-Cat	.247*	-.025	.222*
Normative Perception 2	.099	—	.099
On Normative Perception 2 ($R^2 = .491$)			
Normative Perception 1	.431*	.020	.451*
Personal Attitude 1	-.134	.336*	.201*
Alcohol Use 2	.452*	.023	.475*
Status Value	-.112	—	-.112
Social Id/Self-Cat	.077	-.040	.037
On Social Identity/Self-Categorization ($R^2 = .236$)			
Normative Perception 1	.041	.006	.046
Personal Attitude 1	.374*	.074	.448*
Alcohol Use 2	.112	—	.112
On Status Value ($R^2 = .110$)			
Normative Perception 1	.048	.008	.057
Personal Attitude 1	-.067	.050	-.017
Alcohol Use 2	-.168	.040	-.128
Social Id/Self-Cat	.360*	—	.360*
On Alcohol Use 2 ($R^2 = .484$)			
Normative Perception 1	.049	—	.049
Personal Attitude 1	.633*	—	.633*

 $p < .05$

Effects On Alcohol Use at Time Three (AU3)

Direct effects. Of the seven variables hypothesized to have a direct effect on alcohol use 3, only alcohol use 2 ($\beta = .614$) had significant effects. Others with positive direct effects included status value ($\beta = .073$), social identity/self-categorization ($\beta = .007$), normative perception 2 ($\beta = .049$), personal attitude 2 ($\beta = .077$) and intention ($\beta = .088$). Perceived behavioral control ($\beta = -.052$) had a negative non-significant direct effect.

Indirect effects. Only personal attitude 1 ($\beta = .517$) had a significant indirect effect on alcohol use 3; personal attitude 2 ($\beta = .035$) had a non-significant indirect effect. Other positive effects derived from normative perception 1 ($\beta = .071$), alcohol use 2 ($\beta = .102$), social identity/self-categorization ($\beta = .056$), normative perception 2 ($\beta = .027$), and perceived behavioral control ($\beta = .002$). Status value ($\beta = -.014$) had a small negative effect on alcohol use 3.

Total effects. Two sources, personal attitude 1 ($\beta = .517$) and alcohol use 2 ($\beta = .716$), had significant total effects on alcohol use 2 for Asian Pacific American students. Positive but non-significant effects came from normative perception 1 ($\beta = .071$), status value ($\beta = .059$), social identity/self-categorization ($\beta = .063$), normative perception 2 ($\beta = .076$), personal attitude 2 ($\beta = .113$) and intention ($\beta = .088$). Perceived behavioral control ($\beta = -.050$) had a small negative effect on alcohol use 3.

Effects On Intention (IN)

Direct effects. Two of the six variables hypothesized to directly influence intention were significant in their effects, alcohol use 2 ($\beta = .345$) and personal attitude 2 ($\beta = .531$). Others had positive but non-significant effects: status value ($\beta = .057$), social

identity/self-categorization ($\beta = .034$), normative perception 2 ($\beta = .086$) and perceived behavioral control ($\beta = .023$).

Indirect effects. Three sources significantly and indirectly influenced intention for Asian Pacific American students, personal attitude 1 ($\beta = .635$), alcohol use 2 ($\beta = .302$), and social identity/self-categorization ($\beta = .144$). Status value ($\beta = -.058$) had a non-significant negative effect on intention, and normative perception 1 ($\beta = .084$), normative perception 2 ($\beta = .049$) and personal attitude 2 ($\beta = .005$) all had positive effects.

Total effects. There were a number of sources of significant total effects on intention for Asian Pacific American students. Personal attitude 1 ($\beta = .635$) and alcohol use 2 ($\beta = .647$), both of which also had significant total effects on alcohol use 3, were significant in their effects on drinking intention. Social identity/self-categorization ($\beta = .178$), normative perception 2 ($\beta = .136$) and personal attitude 2 ($\beta = .536$) also had significant total effects on intention. Normative perception 1 ($\beta = .084$) and perceived behavioral control ($\beta = .023$) provided small positive effects, but the net effect for status value ($\beta = -.001$) was negative.

Effects On Perceived Behavioral Control (PBC)

Direct effects. None of the variables in the model contributed significantly and directly to perceived behavioral control for Asian Pacific American students. Several variables had non-significant positive effects: alcohol use 2 ($\beta = .114$), status value ($\beta = .036$), social identity/self-categorization ($\beta = .033$) and personal attitude 2 ($\beta = .232$). Normative perception 2 ($\beta = -.167$) had a negative and non-significant direct effect on perceived behavioral control for this group.

Indirect effects. The sole significant indirect source of influence on perceived behavioral control was personal attitude 1 ($\beta = .218$). Negative effects derived from normative perception 1 ($\beta = -.055$) and status value ($\beta = -.003$). Alcohol use 2 ($\beta = .034$), social identity/self-categorization ($\beta = .058$) and normative perception 2 ($\beta = .023$) each had a small positive indirect effect on perceived behavioral control.

Total effects. Again, the sole significant source of total effects on perceived behavioral control came from personal attitude 1 ($\beta = .218$), with non-significant negative effects deriving from normative perception 1 ($\beta = -.055$) and normative perception 2 ($\beta = -.144$). Although not significant, personal attitude 2 ($\beta = .232$) had a positive total effect, as did alcohol use 2 ($\beta = .149$), status value ($\beta = .033$), and social identity/self-categorization ($\beta = .091$).

Effects On Personal Attitude 2 (PA2)

Direct effects. Three of six variables posited to have a direct influence on personal attitude 2 were significant in their effects for Asian Pacific American students: personal attitude 1 ($\beta = .295$), alcohol use 2 ($\beta = .406$), and social identity/self-categorization ($\beta = .247$). Normative perception 2 had a non-significant direct positive effect, and normative perception 1 ($\beta = -.024$) and status value ($\beta = -.081$) had non-significant negative direct effects.

Indirect effects. Personal attitude 1 ($\beta = .401$) was the only variable with a significant indirect effect on personal attitude 2. Both normative perception 1 ($\beta = .072$) and alcohol use 2 ($\beta = .085$) had positive but non-significant effects. Status value ($\beta = -.011$) and social identity/self-categorization ($\beta = -.025$) had negative effects on personal attitude 2.

Total effects. Personal attitude 1 ($\beta = .696$), alcohol use 2 ($\beta = .491$) and social identity/self-categorization ($\beta = .222$) all had significant total effects on personal attitude 2. Normative perception 1 ($\beta = .047$) and normative perception 2 ($\beta = .099$) had positive non-significant total effects, and status value ($\beta = -.092$) had a negative total effect.

Effects On Normative Perception 2 (NP2)

Direct effects. Both normative perception 1 ($\beta = .431$) and alcohol use 2 ($\beta = .452$) had significant direct effects on normative perception 2. Social identity/self-categorization ($\beta = .077$) was a small but non-significant direct contributor, and personal attitude 1 ($\beta = -.134$) and status value ($\beta = -.112$) were negative and non-significant in their effects.

Indirect effects. Personal attitude 1 ($\beta = .336$) provided a significant direct effect on normative perception 2. Normative perception 1 ($\beta = .020$) and alcohol use 2 ($\beta = .023$) had small positive effects, and social identity/self-categorization ($\beta = -.040$) had a small negative effect.

Total effects. Significant total effects derived from normative perception 1 ($\beta = .451$), personal attitude 1 ($\beta = .201$) and alcohol use 2 ($\beta = .475$). Status value ($\beta = -.112$) provided a non-significant negative total effect and social identity/self-categorization ($\beta = .037$) a positive one.

Effects On Social Identity/Self-Categorization (SISC)

Direct effects. Three variables had positive direct effects on social identity/self-categorization, but only personal attitude 1 ($\beta = .374$) was significant. Normative perception ($\beta = .041$) and alcohol use 2 ($\beta = .112$) were non-significant.

Indirect effects. No significant effects were found from the two variables indirectly influencing social identity/self-categorization. Normative perception 1 ($\beta = .006$) and personal attitude 1 ($\beta = .074$) both each had a non-significant positive effect.

Total effects. Net effects for personal attitude 1 ($\beta = .448$) were positive and significant. Normative perception 1 ($\beta = .046$) and alcohol use 2 ($\beta = .112$) provided other positive effects.

Effects On Status Value (SV)

Direct effects. Four variables were modeled to contribute directly to status value, but only social identity/self-categorization ($\beta = .360$) was significant in its direct effect. Normative perception 1 ($\beta = .048$) was also positive in its effects, though non-significant. Personal attitude 1 ($\beta = -.067$) and alcohol use 2 ($\beta = -.168$) were both negative and non-significant in their effects.

Indirect effects. None of the three hypothesized variables, normative perception 1 ($\beta = .008$), personal attitude 1 ($\beta = .050$) and alcohol use 2 ($\beta = .040$) had significant indirect effects on status value.

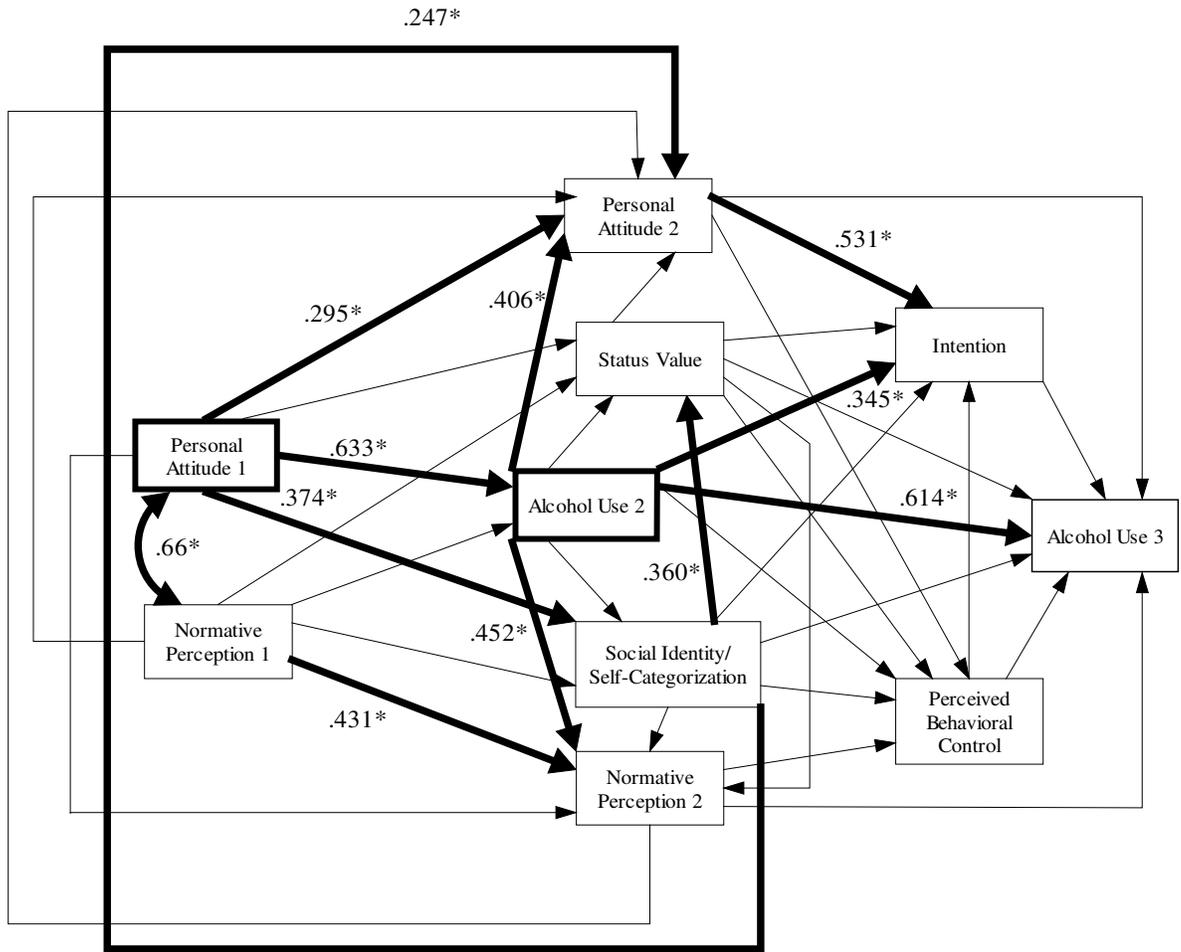
Total effects. Social identity/self-categorization ($\beta = .360$) had significant positive total effects on status value. The other three variables were not significant in their total contributions. Normative perception 1 ($\beta = .051$) had a positive total effect, and personal attitude 1 ($\beta = -.017$) and alcohol use 2 ($\beta = -.128$) each had a negative total effect on status value.

Effects on Alcohol Use 2 (AU2)

Total and direct effects. Two exogenous variables were modeled to contribute directly to this initial endogenous variable. Normative perception 1 ($\beta = .049$) was non-significant, but personal attitude ($\beta = .633$) was significant.

Figure 4.3 illustrates the significant direct effects of the variables in the model on subsequent variables for Asian Pacific American students. Significant direct effects in the model for this group derived from normative perception 1, personal attitude 1, alcohol use 2, social identity/self-categorization, and personal attitude 2.

Figure 4.3. Model for Asian Pacific American Students.



* $p < .05$

Note. All coefficients noted are significant at the .05 level (bold lines). All coefficients are standardized. Variables contributing significant positive total effects to alcohol use 3 in the model are bolded.

Standardized Effect Estimates of Model Variables for Latino/Latina American Students

Total significant effects for Latino/Latina American students in this study derived from five variables. Two of them, personal attitude 1 and alcohol use 2, were the only ones to offer significant total effects to alcohol use 3. Those two variables, as well as normative perception 1, personal attitude 2, and social identity/self-categorization, offered total significant effects to one or more variables in the model. Significant direct

effects derived from normative perception 1, personal attitude 1, personal attitude 2, alcohol use 2 and social identity/self-categorization. Indirect effects were significant from personal attitude 1, alcohol use 2, and social identity/self-categorization. The standardized effect estimates for variables in the model for Latino/Latina American students are presented in Table 4.21.

Table 4.21

Standardized Effect Estimates for Variables in the Model for Hispanic/Latino/Latina Students

Variables	Direct	Indirect	Total
On Alcohol Use Time 3 ($R^2 = .652$)			
Normative Perception 1	—	.189	.189
Personal Attitude 1	—	.480*	.480*
Alcohol Use 2	.483*	.215	.698*
Status Value	.009	-.025	-.016
Social Id/Self-Cat	.112	.050	.162
Normative Perception 2	-.045	.041	-.005
Personal Attitude 2	.064	.169	.233
PBC	-.011	-.018	-.029
Intention	.247	—	.247
On Intention ($R^2 = .906$)			
Normative Perception 1	—	.218	.218*
Personal Attitude 1	—	.643*	.643*
Alcohol Use 2	.353*	.251*	.604*
Status Value	.009	-.056	-.047
Social Id/Self-Cat	-.016	.104	.088
Normative Perception 2	.023	.102	.125
Personal Attitude 2	.655*	.018	.672*
PBC	-.073	—	-.073
On Perceived Behavioral Control ($R^2 = .121$)			
Normative Perception 1	—	.112	.112
Personal Attitude 1	—	.091	.091
Alcohol Use 2	.396	-.025	.372*
Status Value	-.133	.041	-.092
Social Id/Self-Cat	.164	-.126	.037
Normative Perception 2	.094	-.039	.055
Personal Attitude 2	-.240	—	-.240
On Personal Attitude 2 ($R^2 = .829$)			
Normative Perception 1	.027	.143	.169
Personal Attitude 1	.435*	.290*	.725*
Alcohol Use 2	.280*	.146*	.426*
Status Value	-.130	.027	-.102
Social Id/Self-Cat	.273*	-.105*	.168*
Normative Perception 2	.162	—	.162
On Normative Perception 2 ($R^2 = .590$)			
Normative Perception 1	.264	.126	.390*
Personal Attitude 1	.321*	.060	.381*
Alcohol Use 2	.399*	-.149	.250
Status Value	.170	—	.170
Social Id/Self-Cat	-.380*	.073	-.307*
On Social Identity/Self-Categorization ($R^2 = .351$)			
Normative Perception 1	-.157	.140	-.017
Personal Attitude 1	.276	.226*	.502*
Alcohol Use 2	.467*	—	.467*
On Status Value ($R^2 = .247$)			
Normative Perception 1	.016	-.017	-.001
Personal Attitude 1	.138	.199	.338*
Alcohol Use 2	-.032	.200*	.168
Social Id/Self-Cat	.428*	—	.428*
On Alcohol Use 2 ($R^2 = .499$)			
Normative Perception 1	.300*	—	.300*
Personal Attitude 1	.484*	—	.484*

* $p < .05$

Effects On Alcohol Use at Time Three (AU3)

Direct effects. For this group of students only alcohol use 2 ($\beta = .483$) produced significant direct effects on alcohol use 3. Intention ($\beta = .247$) was positive but non-significant. Similarly, status value ($\beta = .009$), social identity/self-categorization ($\beta = .112$), and personal attitude 2 ($\beta = .064$) had non-significant direct effects on alcohol use 3. Normative perception 2 ($\beta = -.045$) and perceived behavioral control ($\beta = -.011$) were both non-significant and negative in their direct effects.

Indirect effects. Of the eight possible sources of indirect effects in the model only personal attitude 1 ($\beta = .480$) was significant in its effects. Normative perception 1 ($\beta = .189$), personal attitude 2 ($\beta = .169$) and alcohol use 2 ($\beta = .215$) were positive but non-significant in their indirect contributions. Social identity/self-categorization ($\beta = .050$) and normative perception 2 ($\beta = .041$) also provided positive indirect effects. Status value ($\beta = -.025$) and perceived behavioral control ($\beta = -.018$) were negative and non-significant in their indirect effects.

Total effects. Significant sources of total effects were personal attitude 1 ($\beta = .480$) and alcohol use 2 ($\beta = .698$). Intention ($\beta = .247$), personal attitude 2 ($\beta = .233$), social identity/self-categorization ($\beta = .162$), and normative perception 1 ($\beta = .189$) had positive but non-significant total effects. Negative but non-significant effects came from status value ($\beta = -.016$), normative perception 2 ($\beta = -.005$) and perceived behavioral control ($\beta = -.029$).

Effects On Intention (IN)

Direct effects. Past alcohol use 2 ($\beta = .353$) and personal attitude 2 ($\beta = .655$) had significant and direct effects on intention. Non-significant positive effects came from

status value ($\beta = .009$) and normative perception 2 ($\beta = .023$), and non-significant negative effects were from social identity/self-categorization ($\beta = -.016$) and perceived behavioral control ($\beta = -.073$).

Indirect effects. Alcohol use 2 ($\beta = .251$), normative perception 1 ($\beta = .218$) and personal attitude 1 ($\beta = .643$) all had significant indirect effects on intention. Social identity/self-categorization ($\beta = .104$) and normative perception 2 ($\beta = .102$) had non-significant but positive indirect effects on intention, as did personal attitude 2 ($\beta = .018$). Status value ($\beta = -.056$) was non-significant and negative in its contributions.

Total effects. Significant total effects were from normative perception 1 ($\beta = .218$), personal attitude 1 ($\beta = .643$), alcohol use 2 ($\beta = .604$) and personal attitude 2 ($\beta = .672$). Non-significant positive total effects were derived from social identity/self-categorization ($\beta = .088$) and normative perception 2 ($\beta = .125$). Non-significant negative total effects were from status value ($\beta = -.047$) and perceived behavioral control ($\beta = -.073$).

Effects On Perceived Behavioral Control (PBC)

Direct effects. None of the variables modeled as direct contributors was found to have a significant direct effect on perceived behavioral control. Alcohol use 2 ($\beta = .396$), social identity/self-categorization ($\beta = .164$) and normative perception 2 ($\beta = .094$) were non-significant and positive in their direct effects. Status value ($\beta = -.133$) and personal attitude 2 ($\beta = -.240$) were non-significant and negative in their direct effects.

Indirect effects. No variables in the model were found to have significant indirect effects on perceived behavioral control for Hispanic/Latino/Latina students, though normative perception 1 ($\beta = .112$), personal attitude 1 ($\beta = .091$), and status value

($\beta = .041$) all contributed positively. Alcohol use 2 ($\beta = -.025$), social identity/self-categorization ($\beta = -.112$) and normative perception 2 ($\beta = -.039$) all had non-significant negative indirect effects on perceived behavioral control.

Total effects. Only alcohol use 2 ($\beta = .372$) was significant in its total effects on perceived behavioral control. Normative perception 1 ($\beta = .112$), personal attitude 1 ($\beta = .091$), social identity/self-categorization ($\beta = .037$), and normative perception 2 ($\beta = .055$) were all positive but non-significant in their total effects. Status value ($\beta = -.092$) and personal attitude 2 ($\beta = -.240$) were negative and non-significant in their total effects.

Effects On Personal Attitude 2 (PA2)

Direct effects. Three variables produced significant direct effects on personal attitude 2 for the Latino/Latina students in the study: personal attitude 1 ($\beta = .435$), alcohol use 2 ($\beta = .280$) and social identity/self-categorization ($\beta = .273$). Normative perception 2 ($\beta = .162$) and normative perception 1 ($\beta = .027$) were non-significant but positive in their direct effects, but status value ($\beta = -.130$) was non-significant and negative in its direct effect.

Indirect effects. Personal attitude 1 ($\beta = .290$) had a significant positive indirect effect, as did alcohol use 2 ($\beta = .146$). Interestingly, social identity/self-categorization ($\beta = -.105$) had a significant but negative indirect effect on personal attitude 2. Normative perception 1 ($\beta = .143$) and status value ($\beta = .027$) were both positive but non-significant in their indirect effects.

Total effects. Three variables in the model had significant and positive total effects on personal attitude 2, namely personal attitude 1 ($\beta = .725$), alcohol use 2

($\beta = .426$), and social identity/self-categorization ($\beta = .168$). Normative perception 1 ($\beta = .169$) and normative perception 2 ($\beta = .162$) had additional positive but non-significant total effects, and status value ($\beta = -.102$) was non-significant and negative in its total effects.

Effects On Normative Perception 2 (NP2)

Direct effects. Of the five variables modeled to directly effect normative perception 2, three were significant in those direct effects for this group. Personal attitude 1 ($\beta = .321$) and alcohol use 2 ($\beta = .399$) had a significant and positive effect, and social identity/self-categorization ($\beta = -.380$) had a significant negative effect. Normative perception 1 ($\beta = .264$) and status value ($\beta = .170$) were also positive in their direct effects.

Indirect effects. None of the variables modeled had significant indirect effects on normative perception 2. Normative perception 1 ($\beta = .126$), personal attitude 1 ($\beta = .060$), and social identity/self-categorization ($\beta = .073$) had non-significant and positive indirect effects on normative perception 2, and alcohol use 2 ($\beta = -.149$) had a non-significant negative indirect effect.

Total effects. Three variables had significant net effects on normative perception 2. Normative perception 1 ($\beta = .390$) and personal attitude 1 ($\beta = .381$) had significant and positive total effects, while social identity/self-categorization ($\beta = -.307$) had a significant negative total effect. Non-significant but positive effects also derived from alcohol use 2 ($\beta = .250$) and status value ($\beta = .170$).

Effects On Social Identity/Self-Categorization (SISC)

Direct Effects. Significant direct effects on this variable came from alcohol use 2 ($\beta = .467$). Personal attitude 1 ($\beta = .276$) also had a positive, though non-significant, effect. Normative perception 1 ($\beta = -.157$) had negative but non-significant direct effects on social identity/self-categorization.

Indirect effects. Personal attitude 1 ($\beta = .226$) had a significant positive indirect effect on social identity/self-categorization, whereas normative perception 1 ($\beta = .140$) provided a non-significant indirect effect.

Total effects. Both personal attitude 1 ($\beta = .502$) and alcohol use 2 ($\beta = .467$) had significant total effects on social identity/self-categorization. The net effect of normative perception 1 ($\beta = -.017$) was negative and non-significant.

Effects On Status Value (SV)

Direct effects. Of the four variables modeling direct effects on status value, only social identity/self-categorization ($\beta = .428$) was significant in its effect. Normative perception 1 ($\beta = .016$) and personal attitude 1 ($\beta = .138$) were positive but non-significant in their direct effects, while alcohol use 2 ($\beta = -.032$) was negative and non-significant.

Indirect effects. Alcohol use 2 ($\beta = .200$) had a significant indirect effect. Personal attitude 1 ($\beta = .199$) had a positive and non-significant indirect effect, whereas normative perception 1 ($\beta = -.017$) had a negative one.

Total effects. Both personal attitude 1 ($\beta = .388$) and social identity/self-categorization ($\beta = .428$) contributed significant total effects to status value for Hispanic/Latino/Latina students. Alcohol use 2 ($\beta = .168$) had a positive but non-

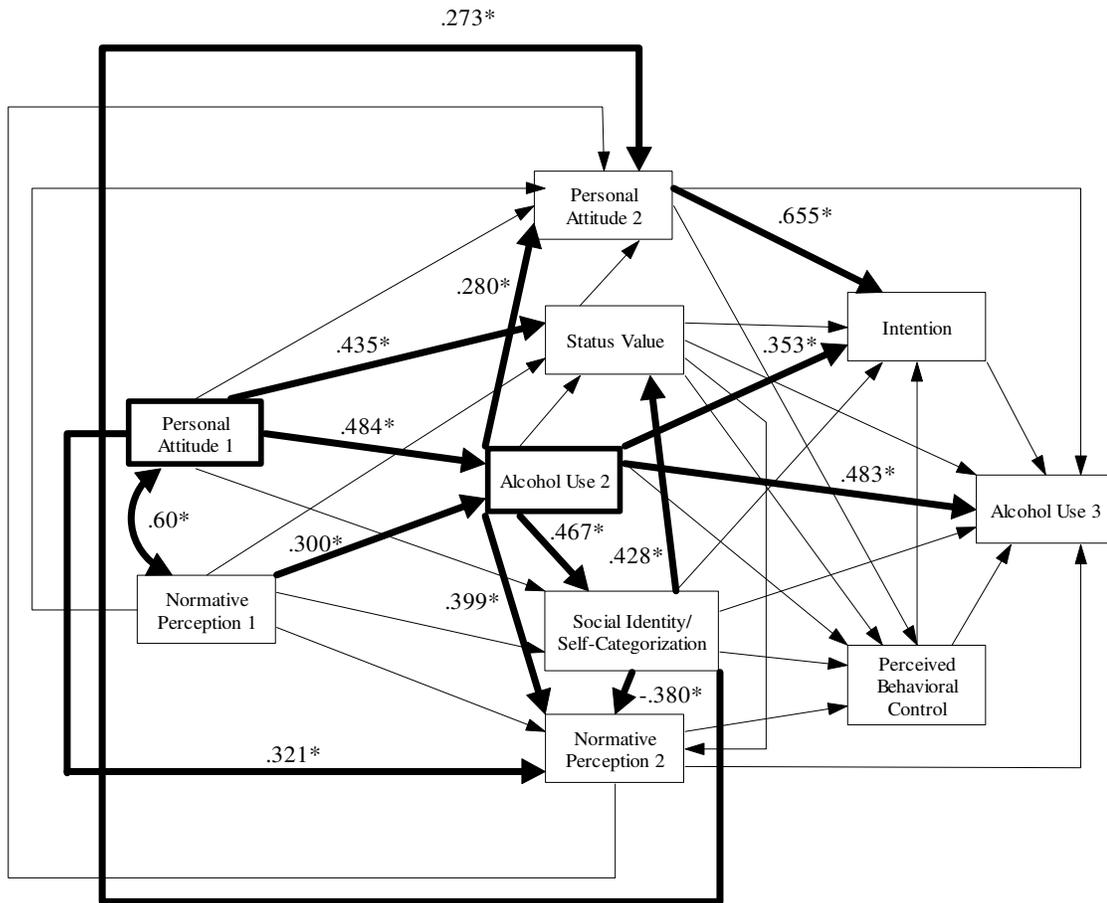
significant total effect and normative perception 1 ($\beta = -.001$) a negligible negative total effect on status value.

Effects On Alcohol Use 2 (AU2)

Total and direct effects. Normative perception 1 ($\beta = .300$) and personal attitude 1 ($\beta = .484$) each had significant direct and total effects on alcohol use 2 for this group.

Figure 4.4 illustrates the significant direct effects of the variables in the model on each subsequent variable for Latino/Latina American students. Significant direct effects for these students derived from normative perception 1, personal attitude 1, alcohol use 2, social identity/self-categorization, and personal attitude 2.

Figure 4.4. Model for Latino/Latina American Students.



* $p < .05$

Note. All coefficients noted are significant at the .05 level (bold lines). All coefficients are standardized. Variables contributing significant positive total effects to alcohol use 3 in the model are bolded.

Standardized Effect Estimates of Model Variables for White American Students

Numerous sources of influence provided significant total effects for variables in the model for White American students (Table 4.22). Significant total effects on alcohol use 3 derived from six of the nine variables hypothesized to influence it: normative perception 1, personal attitude 1, alcohol use 3, social identity/self-categorization, personal attitude 2, and intention. Other sources of significant total effects on one or more variables included normative perception 2, perceived behavioral control, and status value.

In other words all variables in the model contributed significant total effects to at least one other variable in the model.

Significant direct effects for White students on alcohol use 3 were from alcohol use 2 and intention. Alcohol use 2 also provided significant indirect effects on alcohol use 3, as did normative perception 1, personal attitude 1, social identity/self-categorization, normative perception 2 and personal attitude 2. Other significant direct effects in the model derived from alcohol use 2, social identity/self-categorization, personal attitude 2, perceived behavioral control, status value, normative perception 1 and personal attitude 1. Indirect significant effects in the model were from personal attitude 1, alcohol use 2, social identity/self-categorization and normative perception on the remaining endogenous variables.

Table 4.22

Standardized Effect Estimates for Variables in the Model for White American Students

Variables	Direct	Indirect	Total
On Alcohol Use Time 3 ($R^2 = .667$)			
Normative Perception 1	—	.097*	.097*
Personal Attitude 1	—	.553*	.553*
Alcohol Use 2	.520*	.191*	.711*
Status Value	.033	-.005	.028
Social Id/Self-Cat	.046	.060*	.105*
Normative Perception 2	.029	.017*	.046
Personal Attitude 2	.101	.120*	.221*
PBC	.005	.006	.011
Intention	.180*	—	.180*
On Intention ($R^2 = .863$)			
Normative Perception 1	—	.054	.054
Personal Attitude 1	—	.709*	.709*
Alcohol Use 2	.246*	.348*	.594*
Status Value	-.003	-.016	-.019
Social Id/Self-Cat	.079*	.087*	.166*
Normative Perception 2	.028	.036	.064*
Personal Attitude 2	.651*	.007	.658*
PBC	.034*	—	.034*
On Perceived Behavioral Control ($R^2 = .088$)			
Normative Perception 1	—	.021	.021
Personal Attitude 1	—	.202*	.202*
Alcohol Use 2	.045	.107*	.152*
Status Value	.138*	-.007	.131*
Social Id/Self-Cat	.000	.091*	.091
Normative Perception 2	-.016	.011	-.004
Personal Attitude 2	.205*	—	.205*
On Personal Attitude 2 ($R^2 = .755$)			
Normative Perception 1	-.073*	.078*	.006
Personal Attitude 1	.505*	.288*	.793*
Alcohol Use 2	.371*	.083*	.455*
Status Value	-.034	.001	-.032
Social Id/Self-Cat	.145*	-.015	.131*
Normative Perception 2	.055	—	.055
On Normative Perception 2 ($R^2 = .442$)			
Normative Perception 1	.498*	.049*	.548*
Personal Attitude 1	-.151*	.237*	.086
Alcohol Use 2	.376*	.007	.383*
Status Value	.022	—	.022
Social Id/Self-Cat	.008	.010	.019
On Social Identity/Self-Categorization ($R^2 = .305$)			
Normative Perception 1	.006	.056*	.062
Personal Attitude 1	.115*	.286*	.400*
Alcohol Use 2	.464*	—	.464*
On Status Value ($R^2 = .216$)			
Normative Perception 1	.145*	.020	.165*
Personal Attitude 1	.052	.143*	.090
Alcohol Use 2	-.071	.216*	.145*
Social Id/Self-Cat	.466*	—	.466*
On Alcohol Use 2 ($R^2 = .487$)			
Normative Perception 1	.121*	—	.121*
Personal Attitude 1	.616*	—	.616*

 $p < .05$

Effects On Alcohol Use at Time Three (AU3)

Direct effects. For White American students, two variables were found to have significant direct effects on alcohol use 3, specifically alcohol use 2 ($\beta = .520$) and intention ($\beta = .180$). Other positive but non-significant effects were from status value ($\beta = .033$), social identity/self-categorization ($\beta = .046$), normative perception ($\beta = .029$), personal attitude 2 ($\beta = .101$) and perceived behavioral control ($\beta = .005$).

Indirect effects. Six of the eight variables modeled to have indirect effects on alcohol use 3 were significant in their indirect contributions: normative perception 1 ($\beta = .097$), personal attitude 1 ($\beta = .553$), alcohol use 2 ($\beta = .191$), social identity/self-categorization ($\beta = .060$), normative perception 2 ($\beta = .017$) and personal attitude 2 ($\beta = .120$). Perceived behavioral control ($\beta = .006$) had a positive and non-significant indirect effect; status value ($\beta = -.005$) had a negative and non-significant indirect effect.

Total effects. There were multiple significant sources of total effects on alcohol use 3 for this group: normative perception 1 ($\beta = .097$), personal attitude 1 ($\beta = .553$), alcohol use 2 ($\beta = .711$), social identity/self-categorization ($\beta = .105$), personal attitude 2 ($\beta = .221$), and intention ($\beta = .180$). Perceived behavioral control ($\beta = .011$), normative perception 2 ($\beta = .046$) and status value ($\beta = .028$) were non-significant but positive in their total effects.

Effects On Intention (IN)

Direct effects. All but two variables hypothesized to predict intention were significant in their direct effects. Alcohol use 2 ($\beta = .246$), social identity/self-categorization ($\beta = .079$), personal attitude 2 ($\beta = .651$) and perceived behavioral control

($\beta = .034$) had significant direct effects on intention. Normative perception 2 ($\beta = .028$) and status value ($\beta = -.003$) were not significant in their direct contributions.

Indirect effects. Significant indirect effects on intention derived from three variables for White American students: personal attitude 1 ($\beta = .709$), alcohol use 2 ($\beta = .348$), and social identity/self-categorization ($\beta = .087$). Normative perception 1 ($\beta = .054$), normative perception 2 ($\beta = .036$) and personal attitude 2 ($\beta = .007$) were positive but non-significant in their effects. Status value ($\beta = -.016$) was negative and non-significant.

Total effects. Six of eight variables had significant total effects on intention for White students, namely personal attitude 1 ($\beta = .709$), alcohol use 2 ($\beta = .594$), social identity/self-categorization ($\beta = .166$), normative perception 2 ($\beta = .064$), personal attitude 2 ($\beta = .658$), and perceived behavioral control ($\beta = .034$). Normative perception 1 ($\beta = .054$) and status value ($\beta = -.019$) were non-significant in their total effects.

Effects On Perceived Behavioral Control (PBC)

Direct effects. Both status value ($\beta = .138$) and personal attitude 2 ($\beta = .205$) had significant direct effects on perceived behavioral control. Alcohol use 2 ($\beta = .045$) had a positive direct effect. Social identity/self-categorization ($\beta = .000$) had no measurable direct effect, and normative perception 2 ($\beta = -.016$) had a non-significant negative direct effect.

Indirect effects. Personal attitude 2 ($\beta = .202$), alcohol use 2 ($\beta = .107$) and social identity/self-categorization ($\beta = .091$) all had significant indirect effects on perceived behavioral control. Normative perception 1 ($\beta = .021$) and normative perception 2

($\beta = .011$) had positive non-significant indirect effects on perceived behavioral control, while status value ($\beta = -.007$) had a non-significant negative effect.

Total effects. Significant net effects on perceived behavioral control for White students came from four sources, personal attitude 1 ($\beta = .202$), alcohol use 2 ($\beta = .152$), status value ($\beta = .131$) and personal attitude 2 ($\beta = .205$). Normative perception 1 ($\beta = .021$) and social identity/self-categorization ($\beta = .091$) were positive but non-significant in their total effects. Normative perception 2 ($\beta = -.004$) was non-significant and negative in total effect.

Effects On Personal Attitude 2 (PA2)

Direct effects. Social identity/self-categorization ($\beta = .145$), personal attitude 1 ($\beta = .505$), and alcohol use 2 ($\beta = .371$) each had a significant and positive direct effect on personal attitude 2, whereas normative perception 1 ($\beta = -.073$) had a significant negative direct effect. Other direct effects were normative perception 2 ($\beta = .055$) and status value ($\beta = .034$).

Indirect effects. Normative perception 1 ($\beta = .078$), personal attitude 1 ($\beta = .288$) and alcohol use 2 ($\beta = .083$) all had significant indirect effects on personal attitude 2. Status value ($\beta = .001$) and social identity/self-categorization ($\beta = -.015$) were the sources of other indirect effects in the model.

Total effects. Personal attitude 1 ($\beta = .793$), alcohol use 2 ($\beta = .455$) and social identity/self-categorization ($\beta = .131$) were significant and positive in their total effects on personal attitude 2 for White students. Normative perception 1 ($\beta = .006$) and normative perception 2 ($\beta = .055$) were positive but non-significant in their total effects

on personal attitude 2. Status value ($\beta = -.032$) was non-significant and negative in its total effect.

Effects On Normative Perception 2 (NP2)

Direct effect. Normative perception 1 ($\beta = .498$) and alcohol use 2 ($\beta = .376$) had positive and significant direct effects on normative perception 2, whereas personal attitude 1 ($\beta = -.151$) had a negative and significant direct effect. Status value ($\beta = .022$) and social identity/self-categorization ($\beta = .008$) were positive and non-significant in their direct effects.

Indirect effects. Normative perception 1 ($\beta = .049$) and personal attitude 1 ($\beta = .237$) both had significant indirect effects on normative perception 2. Alcohol use 2 ($\beta = .007$) and social identity/self-categorization ($\beta = .010$) were both positive but non-significant in their indirect effects.

Total effects. Total significant effects on normative perception 2 derived from normative perception 1 ($\beta = .548$) and alcohol use 2 ($\beta = .383$). Other sources included personal attitude 1 ($\beta = .086$), status value ($\beta = .022$) and social identity/self-categorization ($\beta = .019$), all contributing positive but non-significant total effects.

Effects On Social Identity/Self-Categorization (SISC)

Direct effects. Personal attitude 1 ($\beta = .115$) and alcohol use 2 ($\beta = .464$) were found to have significant direct effects on social identity/self-categorization. Normative perception 1 ($\beta = .006$) had a negligible direct effect.

Indirect effects. Both normative perception 1 ($\beta = .056$) and personal attitude 1 ($\beta = .286$) were found to have significant indirect effects on social identity/self-categorization.

Total effects. Personal attitude 1 ($\beta = .400$) and alcohol use 2 ($\beta = .464$) had significant and positive total effects; however, contributions from normative perception 1 ($\beta = .062$) were non-significant.

Effects On Status Value (SV)

Direct effects. Both normative perception 1 ($\beta = .145$) and social identity/self-categorization ($\beta = .466$) were found to have significant positive direct effects on status value for White students. Personal attitude 1 ($\beta = .052$) had a non-significant positive direct effect and alcohol use 2 ($\beta = -.071$) had a negative direct effect.

Indirect effects. Personal attitude 1 ($\beta = .143$) and alcohol use 2 ($\beta = .216$) provided significant indirect effects on status value, but normative perception 1 ($\beta = .020$) offered non-significant indirect effects.

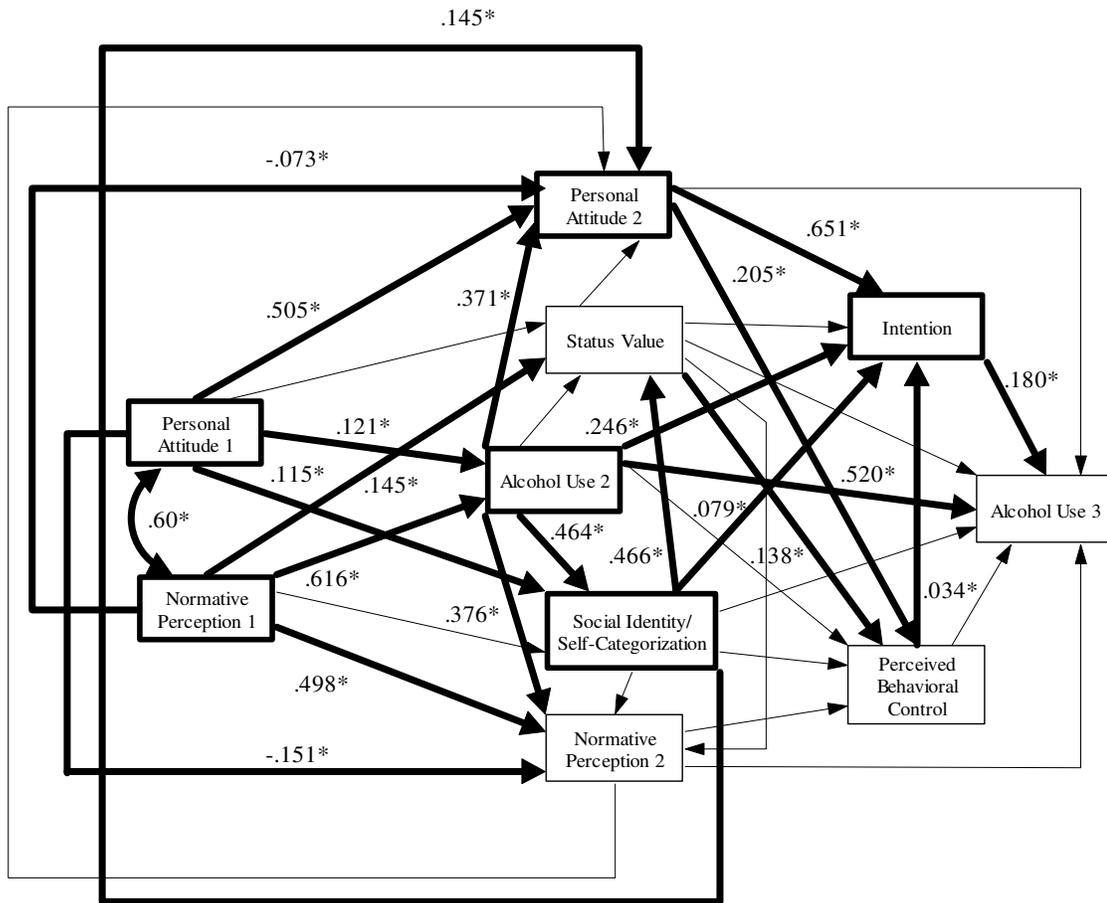
Total effects. Total effects were significant for normative perception 1 ($\beta = .165$), alcohol use 2 ($\beta = .145$) and social identity/self-categorization ($\beta = .466$) but non-significant for personal attitude 1 ($\beta = .090$).

Effects On Alcohol Use 2 (AU2)

Total and direct effects. Both exogenous variables, normative perception 1 ($\beta = .121$) and personal attitude 1 ($\beta = .616$) had significant direct effects on alcohol use 2, the first endogenous variable in the model.

Figure 4.5 illustrates the significant direct effects of variables in the model on each subsequent variable for White American students. Significant direct effects for this group derived from normative perception 1, personal attitude 1, alcohol use 2, social identity/self-categorization, status value, personal attitude 2, perceived behavioral control, and intention.

Figure 4.5. Model for White American Students.



* $p < .05$

Note. All coefficients noted are significant at the .05 level (bold lines). All coefficients are standardized. Variables contributing significant positive total effects to alcohol use 3 in the model are bolded.

Standardized Effect Estimates of Model Variables for Multiracial/Biracial American

Of the nine variables modeled to predict alcohol use 3, all but perceived behavioral control demonstrated significant total effects on more or more subsequent variables in the model for Multiracial/Biracial students (Table 4.23). Normative perception 1 and personal attitude 1 had significant positive total effects on alcohol use 3, as did alcohol use 2 and intention. Normative perception 2 and status value had significant but negative total effects on alcohol use 3 for this group, whereas social

identity/self-categorization, personal attitude 2 and perceived behavioral control did not offer significant total effects on alcohol use 3. Social identity/self-categorization did offer significant total effects to intention, personal attitude 2 and status value. All other variables significant in total effects for alcohol use 3 except intention and normative perception 2 provided significant total effects on at least on other variable in the model.

Significant direct effects on alcohol use 3 derived from alcohol use 2 and intention. Personal attitude 1 and personal attitude 2, alcohol use 2, social identity/self-categorization and normative perception 1 all offered other significant direct effects in the model, as described later. Significant indirect effects on alcohol use 3 were from normative perception 1, personal attitude 1 and personal attitude 2. Each of these variables offered significant indirect effects on variables earlier in the model as well, as did social identity/self-categorization.

Table 4.23

Standardized Effect Estimates for Variables in the Model for Multi/Biracial American Students

Variables	Direct	Indirect	Total
On Alcohol Use Time 3 ($R^2 = .844$)			
Normative Perception 1	—	.318*	.318*
Personal Attitude 1	—	.457*	.457*
Alcohol Use 2	.764*	.063	.827*
Status Value	-.063	-.075	-.137*
Social Id/Self-Cat	-.071	.100	.029
Normative Perception 2	-.119	-.029	-.149*
Personal Attitude 2	-.200	.366*	.166
PBC	-.038	-.053	-.090
Intention	.502*	—	.502*
On Intention ($R^2 = .866$)			
Normative Perception 1	—	.164	.164
Personal Attitude 1	—	.539*	.539*
Alcohol Use 2	.191	.526*	.717*
Status Value	-.104	-.075	-.179*
Social Id/Self-Cat	.133	.167*	.301*
Normative Perception 2	-.075	.001	-.074
Personal Attitude 2	.745*	.010	.735*
PBC	-.105	—	-.105
On Perceived Behavioral Control ($R^2 = .230$)			
Normative Perception 1	—	.152	.152
Personal Attitude 1	—	.217*	.217*
Alcohol Use 2	.505*	-.231	.273
Status Value	-.137	-.023	-.154
Social Id/Self-Cat	-.267	-.016	-.283
Normative Perception 2	-.124	-.001	-.126
Personal Attitude 2	.091	—	.091
On Personal Attitude 2 ($R^2 = .772$)			
Normative Perception 1	-.147	.308*	.161
Personal Attitude 1	.266*	.326*	.592*
Alcohol Use 2	.644*	.105	.749*
Status Value	-.110	-.002	-.111
Social Id/Self-Cat	.260*	-.034	.226*
Normative Perception 2	-.016	—	-.016
On Normative Perception 2 ($R^2 = .333$)			
Normative Perception 1	.341*	.203*	.544*
Personal Attitude 1	-.325*	.176	-.148
Alcohol Use 2	.473*	.014	.487*
Status Value	.106	—	.106
Social Id/Self-Cat	-.062	.033	-.028
On Social Identity/Self-Categorization ($R^2 = .268$)			
Normative Perception 1	-.197	.292*	.096
Personal Attitude 1	-.032	.265*	.233
Alcohol Use 2	.652*	—	.652*
On Status Value ($R^2 = .185$)			
Normative Perception 1	-.197	.168	-.029
Personal Attitude 1	-.212	.198	-.014
Alcohol Use 2	.307	.206	.513*
Social Id/Self-Cat	.316*	—	.316*
On Alcohol Use 2 ($R^2 = .580$)			
Normative Perception 1	.449*	—	.449*
Personal Attitude 1	.406*	—	.406*

* $p < .05$

Effects On Alcohol Use at Time Three (AU3)

Direct effects. Two variables, alcohol use 2 ($\beta = .764$) and intention ($\beta = .502$), had significant direct effects on alcohol use 3 for Multiracial/Biracial American students. Other variables had non-significant and negative direct effects: status value ($\beta = -.063$), social identity/self-categorization ($\beta = -.071$), normative perception 2 ($\beta = -.119$), personal attitude 2 ($\beta = -.200$) and perceived behavioral control ($\beta = -.038$).

Indirect effects. There were three significant sources of indirect effects on alcohol use 3 for this group, normative perception 1 ($\beta = .318$), personal attitude 1 ($\beta = .457$), and personal attitude 2 ($\beta = .366$). Alcohol use 2 ($\beta = .063$) and social identity/self-categorization ($\beta = .100$) were other positive but non-significant sources of indirect effects. Status value ($\beta = -.075$), normative perception ($\beta = -.029$) and perceived behavioral control ($\beta = -.053$) were non-significant and negative in their indirect effects.

Total effects. Of the nine variables modeled to predict alcohol use 3, six of them provided significant total effects for this group. Four were positive in their total significant effects: normative perception 1 ($\beta = .318$), personal attitude 1 ($\beta = .457$), alcohol use 2 ($\beta = .827$) and intention ($\beta = .502$). Another two were significant but negative in total effects, status value ($\beta = -.137$) and normative perception 2 ($\beta = -.149$). Perceived behavioral control ($\beta = -.090$) was negative and non-significant. Personal attitude 1 ($\beta = .166$) and social identity/self-categorization ($\beta = .029$) offered non-significant but positive total effects.

Effects On Intention (IN)

Direct effects. Only personal attitude 2 ($\beta = .745$) was found to have a significant and direct effect on intention for Multiracial/Biracial students. Alcohol use 2 ($\beta = .191$)

and social identity/self-categorization ($\beta = .133$) had non-significant but positive direct effects. Status value ($\beta = -.104$), normative perception 2 ($\beta = -.075$) and perceived behavioral control ($\beta = -.105$) were non-significant and negative in their direct effects.

Indirect effects. Personal attitude 1 ($\beta = .539$), alcohol use 2 ($\beta = .536$), and social identity/self-categorization ($\beta = .167$) all had significant indirect effects on intention. Normative perception 1 ($\beta = .164$), normative perception 2 ($\beta = .002$), and personal attitude 2 ($\beta = .010$) had additional positive indirect effects. Status value ($\beta = -.075$) had a negative non-significant indirect effect.

Total effects. Significant total effects derived from four positive sources: personal attitude 1 ($\beta = .539$), alcohol use 2 ($\beta = .717$), social identity/self-categorization ($\beta = .301$), personal attitude 2 ($\beta = .735$), and from one negative source, status value ($\beta = -.179$). Positive but non-significant total effects came from normative perception 1 ($\beta = .164$) and negative from normative perception 2 ($\beta = .074$) and perceived behavioral control ($\beta = -.105$).

Effects On Perceived Behavioral Control (PBC)

Direct effects. Only alcohol use 2 ($\beta = .505$) had a significant direct effect on perceived behavioral control for this group of students. Personal attitude 2 ($\beta = .091$) was non-significant but positive in its effect. Status value ($\beta = -.127$) and normative perception 2 ($\beta = -.124$) contributed non-significant negative direct effects.

Indirect effects. Personal attitude 1 ($\beta = .217$) was the only variable with a significant indirect effect on perceived behavioral control. Normative perception 1 ($\beta = .152$) also offered a positive if non-significant indirect effect. Other variables were both non-significant and negative in their indirect effects: alcohol use 2 ($\beta = -.231$),

status value ($\beta = -.023$), social identity/self-categorization ($\beta = -.016$) and normative perception 2 ($\beta = -.001$).

Total effects. Personal attitude 1 ($\beta = .217$) provided positive significant total effects on perceived behavioral control, while social identity/self-categorization ($\beta = -.283$) provided significant negative effects. Normative perception 1 ($\beta = .152$), alcohol use 2 ($\beta = .273$) and personal attitude ($\beta = .091$) were non-significant but positive in total effects. Status value ($\beta = -.154$) and normative perception 2 ($\beta = -.126$) were negative and non-significant in total effects.

Effects On Personal Attitude 2 (PA2)

Direct effects. Personal attitude 1 ($\beta = .266$), alcohol use 2 ($\beta = .644$) and social identity/self-categorization ($\beta = .260$) were the significant sources of direct effects on personal attitude 2 for this group. Other sources of direct effects were non-significant and negative: normative perception 1 ($\beta = -.147$), status value ($\beta = -.110$) and normative perception 2 ($\beta = -.016$).

Indirect effects. The two exogenous variables were the sources of significant indirect effects, namely normative perception 1 ($\beta = .308$) and personal attitude 1 ($\beta = .326$). Alcohol use 2 ($\beta = .105$) had a positive but non-significant indirect effect. Status value ($\beta = -.002$) and social identity/self-categorization ($\beta = -.034$) were sources of negative non-significant indirect effects.

Total effects. Significant total effects on personal attitude 2 came from personal attitude 1 ($\beta = .592$), alcohol use 2 ($\beta = .749$) and social identity/self-categorization

($\beta = .226$). Normative perception 1 ($\beta = .161$) was also positive, though non-significant in total effect, while status value ($\beta = -.111$) and normative perception 2 ($\beta = -.016$) were negative.

Effects On Normative Perception 2 (NP2)

Direct effects. The three significant sources of direct effects were positive, normative perception 1 ($\beta = .341$) and alcohol use 2 ($\beta = .473$), as well as negative, personal attitude 1 ($\beta = -.325$). Non-significant sources of direct effects were status value ($\beta = .106$) and social identity/self-categorization ($\beta = -.062$).

Indirect effects. Only normative perception 1 ($\beta = .203$) had a significant indirect effect on normative perception 2. Personal attitude 1 ($\beta = .176$), alcohol use 2 ($\beta = .014$) and social identity/self-categorization ($\beta = .033$) offered positive but non-significant indirect effects.

Total effects. Significant total effects came from normative perception 1 ($\beta = .544$) and from alcohol use 2 ($\beta = .487$). Status value ($\beta = .106$) had a positive but non-significant total effect, whereas personal attitude 1 ($\beta = -.148$) and social identity/self-categorization ($\beta = -.028$) were negative in total effects.

Effects On Social Identity/Self-Categorization (SISC)

Direct effects. Only alcohol use 2 ($\beta = .652$) had a significant and direct effect on social identity/self-categorization for Multiracial/Biracial American students in this study. Negative but non-significant direct effects derived from normative perception 1 ($\beta = -.197$), and personal attitude 1 ($\beta = -.032$).

Indirect effects. Both exogenous variables had a significant indirect effect on social identity/self-categorization specifically normative perception 1 ($\beta = .292$) and personal attitude 1 ($\beta = .265$).

Total effects. Significant total effects derived only from alcohol use 2 ($\beta = .652$), although both normative perception 1 ($\beta = .096$) and personal attitude 1 ($\beta = .233$) also had positive total effects.

Effects On Status Value (SV)

Direct effects. Only social identity/self-categorization ($\beta = .316$) had a significant direct effect on status value for Multiracial/Biracial students in the study. Alcohol use 2 ($\beta = .307$) offered a positive but non-significant direct effect, while normative perception 1 ($\beta = -.197$) and personal attitude ($\beta = -.212$) were negative and non-significant in their direct effects.

Indirect effects. No significant indirect effects contributed to status value, but normative perception 1 ($\beta = .168$), personal attitude 1 ($\beta = .198$) and alcohol use 2 ($\beta = .206$) all offered positive but non-significant indirect effects.

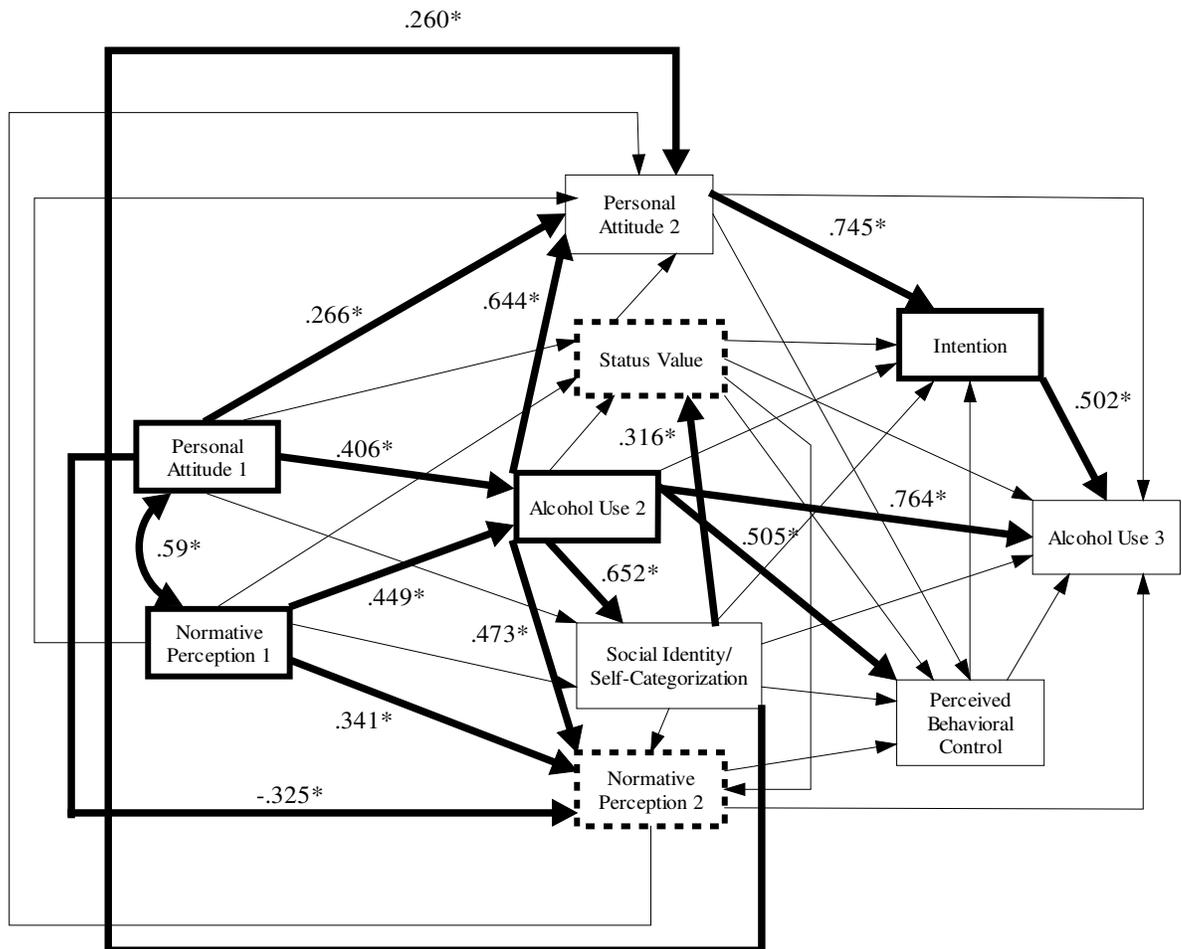
Total effects. Alcohol use 2 ($\beta = .513$) and social identity/self-categorization ($\beta = .316$) both had significant total effects on status value. Normative perception 1 ($\beta = -.029$) and personal attitude 1 ($\beta = -.014$) were negative and non-significant in their total effects.

Effects On Alcohol Use 2 (AU2)

Total and direct effects. The two exogenous variables, normative perception 1 ($\beta = .449$) and personal attitude 1 ($\beta = .406$), each offered significant direct effects to the development of alcohol use 2 for Multiracial/Biracial students in this model.

Figure 4.6 illustrates the significant direct effects of the variables in the model on each subsequent variable for Multiracial/Biracial students. Significant direct effects for this group were derived from normative perception 1, personal attitude 1, alcohol use 2, social identity/self-categorization, personal attitude 2, and intention.

Figure 4.6. Model for Multiracial/Biracial American Students.



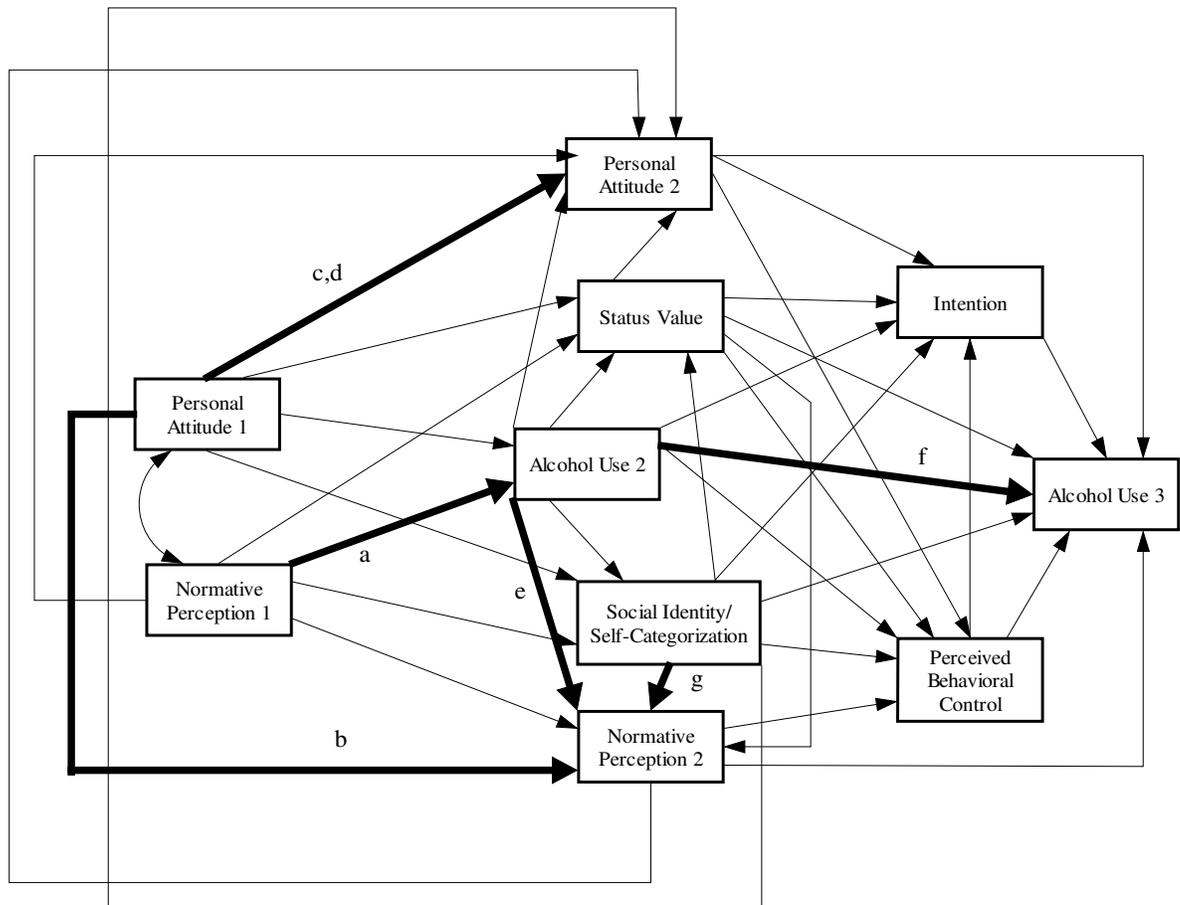
* $p < .05$

Note. All coefficients noted are significant at the .05 level (bold lines). All coefficients are standardized. Variables contributing significant negative total effects to alcohol use 3 in the model are bolded.

Invariance of Model Paths Across Racial-Ethnic Groups

The model was tested across all racial-ethnic groups using the procedure outlined in Chapter Three with *unstandardized* path coefficients as required (as opposed to the standardized ones represented in the path model for each group, as above). Most paths were found to be invariant, or not to differ significantly. Six paths were found to be significantly different among the groups, or not invariant. They are related predominantly to relationships among normative perceptions, alcohol use, and social identity/self-categorization. For Multiracial/Biracial students normative perception 1 more strongly predicted alcohol use 2. Personal attitude 1 was stronger for Latino/Latina students than for any other group in predicting normative perception 2. Personal attitude 1 predicted personal attitude 2 more strongly for African American/Black students than for Asian Pacific American or Multiracial/Biracial American students. The same may be said of the path between personal attitude Time One and Time Two for White students in the study. The role of social identity/self-categorization in predicting normative perception 2 was not as strong for Latino/Latina students as for the other four racial-ethnic groups in the analysis. For African American/Black students their use of alcohol at Time Two more strongly predicted their normative perception 2 than was the case for Latino/Latina and White students. Similarly, alcohol use 2 more strongly predicted alcohol use 3 for African American/Black students than for Asian Pacific American or White. Figure 4.7 illustrates in the significantly non-invariant (bold) paths in the racial-ethnic group analysis and for which groups they were different.

Figure 4.7. Model Illustrating Significantly Non-invariant Paths for the Racial-Ethnic Group Analysis.



$p < .05$

^a Multiracial/Biracial American > Asian Pacific American, White American.

^b Latino/Latina American > African American/Black, Asian Pacific American, White American, Multiracial/Biracial American.

^c African American/Black > Asian Pacific American, Multiracial/Biracial American.

^d White American > Asian Pacific American, Multiracial/Biracial American.

^e African American/Black > Latino/Latina American, White American.

^f African American/Black > Asian Pacific American, White American

^g African American/Black, Asian Pacific American, White American, Multiracial/Biracial American > Latino/Latina American.

Note. Bold lines represent significant paths.

The Model by Gender for White Students

Overview

The only racial-ethnic group with a sample size sufficient enough when split by gender to test the model was White students. Multigroup analysis was performed to test the model for White students by gender. Fit indices were acceptable for both White men and White women.

This section of the chapter first examines the data normality characteristics for White men and White women. Next, model fit is addressed for the two groups. Then direct, indirect, and total effects on each variable in the model are presented for White men and then for White women. A figure illustrating significant paths for each group is provided following presentation of the model effects for that group. Results of the tests of invariance between groups and any significant differences between them are outlined, followed by a related figure.

Normality of Data

As in the previous multigroup analysis, EQS provided tests of data normality. Normalized estimates of “5 or 6 or beyond” (Bentler, 2004, p. 100) were suggested as a level at which non-normality may begin to present a problem. For both men and women, normalized estimates were below this threshold. Five cases recommended by EQS were deleted for men and 10 for women, bringing the normalized estimates to near 3.0, the preferred upper bound. As presented previously in the racial-ethnic group analysis, research by Lei and Lomax (2005) concluded that even with severe nonnormality “the usual interpretation of SEM parameters estimates can be accepted” (p. 16), and that “nonnormality conditions do not produce significant differences in the standard errors of

parameter estimates regardless of sample size [$N=100$ or more was tested] and estimation method” (p. 14), thus assuring acceptability of using the standard test statistics rather than robust and trusting the tests of invariance of paths between groups for White men and White women. Table 4.24 outlines the normality data.

Table 4.24

Normality of Data

Multivariate Kurtosis for White Men and White Women

	Mardia's Coefficient (G2, P)	Normalized Estimate	No. Cases Delete
Men	6.5828	3.0493	5
Women	8.5197	4.9800	10

Model Fit by Gender for White American Students

For both White men and White women, the data-model fit was acceptable. Several types of fit indices were evaluated as well as the standardized absolute covariance residuals in determining the model fit. The three fit indices, two incremental and one absolute, were chosen because of their compatibility with potentially nonnormal data and with smaller sample sizes. Discussion of these fit indices is presented as well as a brief discussion of the covariance residuals.

The SRMR, standardized root mean squared residual, is an absolute fit index examining the observed versus model implied relations. In this instance, the indicator for both men and women suggested was below the required level ($<.08$) (Hu & Bentler,

1999) and suggested acceptable fit. Again, when the SRMR value is very small, the model fits the data well, regardless of what other measures of fit may imply (Bentler, 2004).

Two fit indices used here are considered incremental, meaning that they are evaluations of the model under investigation versus a null model (Kline, 1998). The NFI, normed fit index, reflects the improvement of the researcher’s model over a null model, in other words a model in which no relationships are hypothesized between the variables. The CFI, comparative fit index, is less influenced by sample size than the NFI (Kline). Both of these measures vary between 0 and 1. The CFI exceeded the required .95 (Hu & Bentler, 2004) for both men and women, suggesting acceptable model-data fit. The NFI exceeded .90 for each group as is recommended (Kline). All three indicators were acceptable for both White men and White women and suggested that the model fit the data, and that both Type I and Type II error were minimized (Hu & Bentler, 1999). As noted previously, the CFI and NFI are more robust than chi-square with non-normal data so in this circumstance were chosen because of that (Lei & Lomax, 2005). Although there is no standard answer regarding the definition of good model fit, having several acceptable fit indices suggests a satisfactory data-model fit (Hu & Bentler), as was the case in this analysis. Table 4.25 presents the fit indices for this analysis.

Table 4.25

Model Fit Indices for White Men and White Women

Group	NFI	CFI	SRMR
White Men	.991	.995	.011
White Women	.992	.994	.013

Table 4.26 presents the standardized covariance residuals. As highlighted in the earlier analysis by racial-ethnic group, when these standardized average absolute covariance residuals are small and evenly distributed, it suggests the model fits the data “very well” (Bentler, 2004, p. 115).

Table 4.26

Residuals for White Men and Women

	Avg. Absolute Covariance Residual Standardized	Avg. Absolute Off-Diagonal Covariance Residual Standardized
White Men	.0028	.0034
White Women	.0035	.0043

Direct, Indirect, and Total Variable Effects by Gender for White Men and White Women

The following sections present the direct, indirect, and total effects of the variables in the model by gender for White men and White women. Presentation begins with the effects of exogenous and endogenous variables on the final endogenous variable, alcohol use 3, and proceeds in reverse order to the first endogenous variable, alcohol use 2. Effects for each group are presented separately first. Tables 4.27 to 4.28 outline the standardized parameter estimates, the direct, indirect and total effects, for variables in each group, as well as the explained variance (R^2) of each endogenous variable.

In examining the model for White men and White women, alcohol use 2 was the one common significant direct path to alcohol use 3. The path from intentions was significant for women but not for men, different than was represented in the full group analysis by racial-ethnic group previously presented. There were also other differences in

significant direct influences to alcohol use 3. For White men, social identity/self-categorization and perceived behavioral control were also significant direct contributors to alcohol use 3, whereas for White women, the only other significant direct effects were besides those from alcohol use 2 and intentions were from status value (SV).

The significant direct contributors to alcohol use 2 and to social identity/self-categorization were the same for both men and women in this analysis. Social identity/self-categorization significantly contributed to status value for both, but normative perception 1 was a significant only for women, with higher normative perception 1 contributing to a higher status value. The direct and significant contributors to normative perceptions at Time Two (NP2) were the same for both groups, NP1 and AU2, but for men when PA1 increased, normative perceptions at Time Two dropped. For men there were no significant direct paths to PBC, yet for women SV and PA2 both significantly contributed to PBC. Finally, women's intentions had significant direct effects from their social identity/self-categorization. For men, this was not the case. Following the presentation of the direct, indirect, and total effects on each variable in the model, figures illustrate the significant direct effects in the model for White men for White women.

Standardized Effect Estimates of Model Variables for White American Men Students

Six of nine variables were significant sources of total effects on alcohol use 3 in the model for White American men, including normative perception 1, personal attitude 1, alcohol use 3, social identity/self-categorization, personal attitude and perceived behavioral control. Significant total effects on the other variables in the model derived

from normative perception 1, personal attitude 1, alcohol use 2, social identity/self-categorization and personal attitude 2 for this group (Table 4.27).

Significant direct effects on alcohol use 3 were from alcohol use 2, personal attitude 1, social identity/self-categorization and perceived behavioral control.

Significant direct effects on other variables were from alcohol use 3, personal attitude 2, social identity/self-categorization, and normative perception 1. Normative perception 1, personal attitude 1, alcohol use 2, social identity/self-categorization, normative perception 2 and personal attitude 2 all offered significant indirect effects to at least one variable in the model.

Table 4.27
Standardized Effect Estimates for Variables in the Model for White Men

Variables	Direct	Indirect	Total
On Alcohol Use Time 3 ($R^2 = .764$)			
Normative Perception 1	—	.138*	.138*
Personal Attitude 1	—	.596*	.596*
Alcohol Use 2	.587*	.201*	.788*
Status Value	-.45	.007	-.038
Social Id/Self-Cat	.110*	.000	.109*
Normative Perception 2	.066	.007	.074
Personal Attitude 2	.012	.126*	.138*
PBC	.076*	.009	.08*
Intention	.181	—	.181
On Intention ($R^2 = .867$)			
Normative Perception 1	—	.055	.055
Personal Attitude 1	—	.762*	.762*
Alcohol Use 2	.273*	.279*	.550*
Status Value	-.018	.005	-.013
Social Id/Self-Cat	.050	.064*	.114*
Normative Perception 2	.018	.037	.056
Personal Attitude 2	.651*	.005	.656*
PBC	.050	—	.050
On Perceived Behavioral Control ($R^2 = .101$)			
Normative Perception 1	—	.007	.007
Personal Attitude 1	—	.237*	.237*
Alcohol Use 2	.219	.025	.244*
Status Value	.130	.000	.130
Social Id/Self-Cat	-.028	.075	.047
Normative Perception 2	-.052	.006	-.046
Personal Attitude 2	.098	—	.098
On Personal Attitude 2 ($R^2 = .787$)			
Normative Perception 1	-.076	.079*	.004
Personal Attitude 1	.614*	.233*	.847*
Alcohol Use 2	.274*	.089*	.363*
Status Value	-.002	-.001	-.002
Social Id/Self-Cat	.114*	-.005	.109*
Normative Perception 2	.061	—	.061
On Normative Perception 2 ($R^2 = .468$)			
Normative Perception 1	.477*	.076*	.553*
Personal Attitude 1	-.259*	.327*	.068
Alcohol Use 2	.540*	-.036	.504*
Status Value	-.008	—	-.008
Social Id/Self-Cat	-.066	-.004	-.070
On Social Identity/Self-Categorization ($R^2 = .315$)			
Normative Perception 1	-.028	.075*	.047
Personal Attitude 1	.085	.337*	.423*
Alcohol Use 2	.510*	—	.510*
On Status Value ($R^2 = .216$)			
Normative Perception 1	.011	.020	.031
Personal Attitude 1	-.006	.192*	.186*
Alcohol Use 2	-.011	.240*	.229*
Social Id/Self-Cat	.471*	—	.471*
On Alcohol Use 2 ($R^2 = .581$)			
Normative Perception 1	.148*	—	.148*
Personal Attitude 1	.661*	—	.661*

* $p < .05$

Effects On Alcohol Use at Time Three (AU3)

Direct effects. Three variables had significant direct effects on alcohol use at Time Three for White men, alcohol use 2 ($\beta = .587$), social identity/self-categorization ($\beta = .119$) and perceived behavioral control ($\beta = .076$). Other positive but non-significant direct effects derived from intention ($\beta = .181$), personal attitude 2 ($\beta = .012$) and normative perception 2 ($\beta = .066$). Status value ($\beta = -.045$) added a non-significant negative direct effect.

Indirect effects. Sources of significant indirect effects were normative perception 1 ($\beta = .138$), personal attitude 1 ($\beta = .596$), and personal attitude 2 ($\beta = .126$). Other sources were nominal in their indirect effects, namely status value ($\beta = .007$), social identity/self-categorization ($\beta = .000$), normative perception ($\beta = .007$) and perceived behavioral control ($\beta = .009$).

Total effects. Five of nine variables hypothesized to contribute to alcohol use 3 were significant in their total effects for White men, normative perception 1 ($\beta = .138$), personal attitude 1 ($\beta = .596$), alcohol use 2 ($\beta = .788$), social identity/self-categorization ($\beta = .109$), personal attitude 2 ($\beta = .138$), and perceived behavioral control ($\beta = .08$). Intention ($\beta = .181$) and normative perception 2 ($\beta = .074$) were positive but non-significant in their effects. Status value ($\beta = -.038$) provided a non-significant negative effect.

Effects On Intention (IN)

Direct effects. Only two variables contributed significant direct effects to intention, alcohol use 2 ($\beta = .273$), and personal attitude 2 ($\beta = .651$). Perceived

behavioral control ($\beta = .050$), normative perception ($\beta = .018$), and social identity/self-categorization ($\beta = .050$) also provided positive direct effects, while status value ($\beta = -.018$) offered negative direct effects.

Indirect effects. Personal attitude 2 ($\beta = .762$), alcohol use 2 ($\beta = .279$) and social identity/self-categorization ($\beta = .064$) each had a significant indirect effect on intention for White men. Normative perception 1 ($\beta = .055$), status value ($\beta = .005$), normative perception 2 ($\beta = .037$), and personal attitude 2 ($\beta = .005$) were positive but non-significant in their indirect effects.

Total effects. Several sources provided significant total effects on intention: personal attitude 1 ($\beta = .762$) and personal attitude 2 ($\beta = .656$), as well as alcohol use 2 ($\beta = .550$) and social identity/self-categorization ($\beta = .114$). Normative perception 1 ($\beta = .055$), normative perception 2 ($\beta = .056$), and perceived behavioral control ($\beta = .050$) offered non-significant positive effects, while status value ($\beta = -.013$) was non-significant and negative in total effect.

Effects On Perceived Behavioral Control (PBC)

Direct effects. No variables had a significant direct effect on perceived behavioral control. Positive but non-significant direct effects came from alcohol use 2 ($\beta = .219$), status value ($\beta = .130$) and personal attitude 2 ($\beta = .098$). Social identity/self-categorization ($\beta = -.028$) and normative perception 2 ($\beta = -.052$) offered small direct effects.

Indirect effects. Personal attitude 1 ($\beta = .237$) was the only significant source of indirect effect on perceived behavioral control. Alcohol use 2 ($\beta = .025$), normative

perception 2 ($\beta = .075$), and status value ($\beta = .025$) also offered positive but non-significant effects. Other sources of indirect effects included normative perception 1 ($\beta = .007$), social identity/self-categorization ($\beta = .000$), and normative perception 2 ($\beta = .006$).

Total effects. Personal attitude 1 ($\beta = .237$) and alcohol use 2 ($\beta = .244$) were the two variables providing significant total effects on perceived behavioral control. Status value ($\beta = .130$), personal attitude 2 ($\beta = .098$), social identity/self-categorization ($\beta = .047$), and normative perception 1 ($\beta = .007$) were positive but non-significant in their total effects, while normative perception 2 ($\beta = -.046$) was negative.

Effects On Personal Attitude 2 (PA2)

Direct effects. Direct effects on personal attitude 2 came from three significant sources, namely personal attitude 1 ($\beta = .614$), alcohol use 2 ($\beta = .274$) and social identity/self-categorization ($\beta = .114$). Normative perception 2 ($\beta = .061$) was not significant but was positive in its direct effects, while normative perception 1 ($\beta = -.076$) and status value ($\beta = -.002$) offered negative direct effects.

Indirect effects. Normative perception 1 ($\beta = .079$), personal attitude 1 ($\beta = .233$) and alcohol use 2 ($\beta = .089$) were significant sources of indirect effects on personal attitude 2 for White men. Both status value ($\beta = -.001$) and social identity/self-categorization ($\beta = -.005$) were non-significant and negligible in their indirect effects.

Total effects. Three variables had significant total effects on personal attitude 2 for White men, personal attitude 1 ($\beta = .847$), alcohol use 2 ($\beta = .363$) and social identity/self-categorization ($\beta = .109$). Other positive total effects were from normative

perception 2 ($\beta = .061$) and normative perception 1 ($\beta = .004$), while status value ($\beta = -.002$) was negative in its total contribution.

Effects On Normative Perception 2 (NP2)

Direct effects. Two sources, normative perception 1 ($\beta = .477$) and alcohol use 2 ($\beta = .540$), offered positive and significant direct effects on normative perception 2, while personal attitude 1 ($\beta = -.259$) provided a significant but negative direct effect. Status value ($\beta = -.008$) and social identity/self-categorization ($\beta = -.066$) were negative and non-significant in direct effects.

Indirect effects. Both normative perception 1 ($\beta = .076$) and personal attitude 1 ($\beta = .327$) had a significant indirect effect on normative perception 2 for White men. Both alcohol use 2 ($\beta = -.036$) and social identity/self-categorization ($\beta = -.004$) offered negative and non-significant indirect effects.

Total effects. Normative perception 1 ($\beta = .533$) and alcohol use 2 ($\beta = .504$) were the two significant sources of total effects on normative perception 2. Personal attitude 1 ($\beta = .068$) was non-significant, as were status value ($\beta = -.008$) and social identity/self-categorization ($\beta = -.070$) in their total effects.

Effects On Social Identity/Self-Categorization (SISC)

Direct effects. Alcohol use 2 ($\beta = .510$) was the sole significant source of direct effect on social identity/self-categorization in the model. Personal attitude 1 ($\beta = .085$) and normative perception 1 ($\beta = -.028$) had non-significant direct effects.

Indirect effects. The indirect effects of both normative perception 1 ($\beta = .075$) and personal attitude 1 ($\beta = .337$) were significant.

Total effects. In total, normative perception 1 ($\beta = .047$) was not significant in its effect, while personal attitude 1 ($\beta = .423$) and alcohol use 2 ($\beta = .510$) each provided significant positive total effects.

Effects On Status Value (SV)

Direct effects. As hypothesized social identity/self-categorization ($\beta = .471$) had a significant positive direct effect on status value. However, normative perception ($\beta = .011$), personal attitude 1 ($\beta = -.006$) and alcohol use 2 ($\beta = -.011$) had non-significant direct effects.

Indirect effects. Significant direct effects on status value were derived from personal attitude 1 ($\beta = .112$) and alcohol use 2 ($\beta = .240$), but normative perception 1 ($\beta = .020$) was a non-significant indirect contributor to status value for White men.

Total effects. Three sources contributed significant total effects to status value, namely personal attitude 1 ($\beta = .186$), alcohol use 2 ($\beta = .240$) and social identity/self-categorization ($\beta = .471$). Normative perception 1 ($\beta = .031$) also offered positive, though non-significant, total effects.

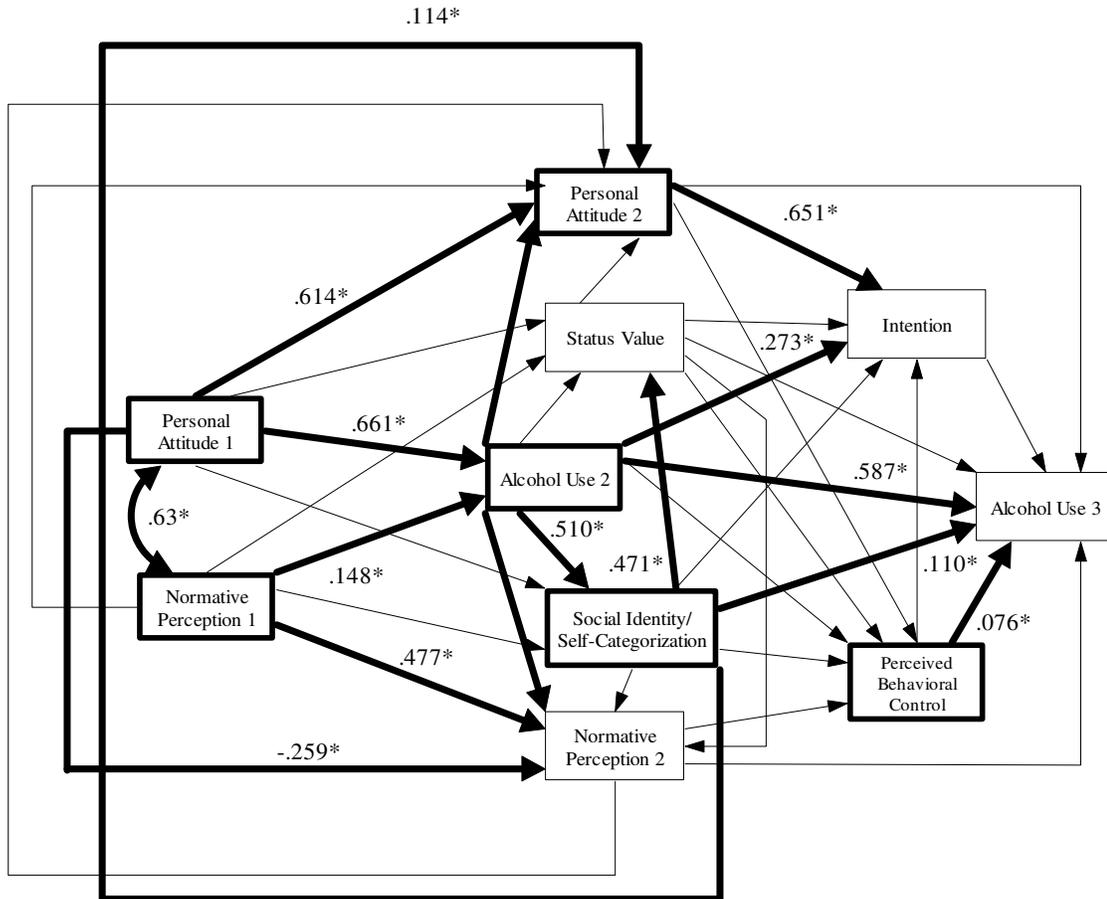
Effects On Alcohol Use 2 (AU2)

Total and direct effects. The two exogenous variables, normative perception 1 ($\beta = .148$) and personal attitude 2 ($\beta = .661$), both contributed significantly and directly to the first endogenous variable in the model, alcohol use 2. No indirect effects were modeled.

Figure 4.8 illustrates the significant direct effects of variables in the model on each subsequent variable for White men. Significant direct effects for this group derived

from normative perception 1, personal attitude 1, alcohol use 2, social identity/self-categorization, personal attitude 2, and perceived behavioral control.

Figure 4.8. Model for White Men Students.



* $p < .05$

Note. All coefficients noted are significant at the .05 level (bold lines). All coefficients are standardized. Variables contributing significant total effects to alcohol use 3 in the model are bolded.

Standardized Effect Estimates of Model Variables for White American Women Students

Among White American women students in this study, all variables modeled had significant total effects on at least one other variable in the model except for perceived behavioral control which offered a non-significant negative effect to alcohol use 3 and a positive one to intention. Total significant effects on alcohol use 3 derived from personal

attitude 1, alcohol use 2, social identity/self-categorization, personal attitude 2 and intention. Normative perception 2 additionally contributed a significant total effect to intention. Both personal attitude 1 and personal attitude 2, as well as alcohol use 2 and status value, offered significant total effects to perceived behavioral control, again, the one variable not offering any significant effects to other variables in the model. Personal attitude 2 had a significant positive total effects derived from alcohol use 2, social identity/self-categorization, normative perception 2 and significant negative total effects from status value.

Significant direct effects on alcohol use 3 derived from alcohol use 2, status value and intention, while significant indirect effects were from personal attitude 1, alcohol use 2, social identity/self-categorization, normative perception 2, personal attitude 2 and, negatively, from status value.

Other significant direct effects in the model were from all variables except intention and perceived behavioral control. Additional indirect and significant effects were from all variables except personal attitude 2, intention, and perceived behavioral control. Direct, indirect and total effects are represented in Table 4.28.

Table 4.28
Standardized Effect Estimates for Variables in the Model for White Women

Variables	Direct	Indirect	Total
On Alcohol Use Time 3 ($R^2 = .633$)			
Normative Perception 1	—	.070	.070
Personal Attitude 1	—	.537*	.537*
Alcohol Use 2	.458*	.219*	.677*
Status Value	.087*	-.028*	.059
Social Id/Self-Cat	.015	.098*	.113*
Normative Perception 2	-.024	.028*	.003
Personal Attitude 2	.162	.126*	.288*
PBC	-.061	.004	-.057
Intention	.213*	—	.213*
On Intention ($R^2 = .864$)			
Normative Perception 1	—	.053	.053
Personal Attitude 1	—	.683*	.683*
Alcohol Use 2	.239*	.391*	.630*
Status Value	.012	-.045*	-.034
Social Id/Self-Cat	.079*	.106*	.185*
Normative Perception 2	.027	.050*	.077*
Personal Attitude 2	.655*	.004	.659*
PBC	.017	—	.017
On Perceived Behavioral Control ($R^2 = .092$)			
Normative Perception 1	—	.038	.038
Personal Attitude 1	—	.190*	.190*
Alcohol Use 2	.020	.132*	.152*
Status Value	.151*	-.017	.134*
Social Id/Self-Cat	-.014	.106*	.093
Normative Perception 2	.000	.018	.018
Personal Attitude 2	.231*	—	.231*
On Personal Attitude 2 ($R^2 = .764$)			
Normative Perception 1	-.079*	.082*	.004
Personal Attitude 1	.449*	.319*	.769*
Alcohol Use 2	.411*	.106*	.517*
Status Value	-.075*	.002	-.073*
Social Id/Self-Cat	.181*	-.032*	.149*
Normative Perception 2	.076*	—	.076*
On Normative Perception 2 ($R^2 = .437$)			
Normative Perception 1	.505*	.044*	.549*
Personal Attitude 1	-.108	.201*	.092
Alcohol Use 2	.310*	.023	.333*
Status Value	.026	—	.026
Social Id/Self-Cat	.040	.012	.052
On Social Identity/Self-Categorization ($R^2 = .333$)			
Normative Perception 1	.009	.057*	.065
Personal Attitude 1	.103	.295*	.399*
Alcohol Use 2	.498*	—	.498*
On Status Value ($R^2 = .229$)			
Normative Perception 1	.219*	.018	.237*
Personal Attitude 1	-.083	.123*	.040
Alcohol Use 2	-.112	.237*	.125
Social Id/Self-Cat	.476*	—	.476*
On Alcohol Use 2 ($R^2 = .448$)			
Normative Perception 1	.114*	—	.114*
Personal Attitude 1	.592*	—	.592*

$p < .05$

Effects On Alcohol Use at Time Three (AU3)

Direct effects. For White women there were three significant sources of direct effects on alcohol use 3: alcohol use 2 ($\beta = .458$), status value ($\beta = .087$) and intention ($\beta = .213$). Social identity/self-categorization ($\beta = .015$) offered another positive but non-significant direct effect, as did personal attitude 2 ($\beta = .162$). Perceived behavioral control ($\beta = -.061$) and normative perception 2 ($\beta = -.024$) were both non-significant and negative in their direct effects.

Indirect effects. A number of significant sources of indirect effects on alcohol use 3 were found. Personal attitude 1 ($\beta = .537$), alcohol use 2 ($\beta = .219$), social identity/self-categorization ($\beta = .098$), normative perception 2 ($\beta = .028$) and personal attitude 1 ($\beta = .126$) all had positive and significant indirect effects on alcohol use 3 for White women, while status value ($\beta = -.028$) had a significant but negative indirect effect. Other indirect effects were non-significant and included normative perception 1 ($\beta = .070$), and perceived behavioral control ($\beta = .004$).

Total effects. Significant total effects on alcohol use 3 for White women derived from five sources: personal attitude 1 ($\beta = .537$), alcohol use 2 ($\beta = .677$), social identity/self-categorization ($\beta = .113$), personal attitude 2 ($\beta = .288$) and intention ($\beta = .213$). Non-significant total effects were from normative perception 1 ($\beta = .070$), status value ($\beta = .059$), normative perception 2 ($\beta = .003$) and personal attitude 2 ($\beta = -.057$).

Effects On Intention (IN)

Direct effects. Alcohol use 2 ($\beta = .239$), social identity/self-categorization ($\beta = .079$) and personal attitude 2 ($\beta = .655$) all had significant direct effects on drinking intention for White women. Though non-significant, status value ($\beta = .012$), normative perception 2 ($\beta = .027$) and perceived behavioral control ($\beta = .017$) also had direct effects.

Indirect effects. Five of the seven hypothesized sources of influence had significant indirect effects on intention for this group: personal attitude 1 ($\beta = .683$), alcohol use 2 ($\beta = .391$), status value ($\beta = -.045$), social identity/self-categorization ($\beta = .106$), and normative perception 2 ($\beta = .050$). Normative perception 1 ($\beta = .053$) and personal attitude 2 ($\beta = .004$) had non-significant indirect effects.

Total effects. Eight variables were modeled to effect intention and five were significant in their total effects on that variable. Personal attitude 1 ($\beta = .683$), alcohol use 2 ($\beta = .630$), social identity/self-categorization ($\beta = .185$), normative perception 2 ($\beta = .077$) and personal attitude 2 ($\beta = .659$) all offered significant total effects to intention. Perceived behavioral control ($\beta = .017$), normative perception, and status value ($\beta = -.034$) were non-significant in total effects.

Effects On Perceived Behavioral Control (PBC)

Direct effects. Only status value ($\beta = .151$) and personal attitude 2 ($\beta = .231$) were significant direct contributors to perceived behavioral control. Normative perception 2 ($\beta = .000$) was not a direct contributor. Alcohol use 2 ($\beta = .020$) and social identity/self-categorization ($\beta = -.014$) had non-significant direct effects on perceived behavioral control.

Indirect effects. Significant indirect effects on perceived behavioral control were from personal attitude 1 ($\beta = .190$), alcohol use 2 ($\beta = .132$) and social identity/self-categorization ($\beta = .106$). Non-significant indirect effects derived from normative perception 1 ($\beta = .038$) and normative perception 2 ($\beta = .018$), as well as status value ($\beta = -.017$).

Total effects. Four variables offered significant total effects to perceived behavioral control for White women, namely personal attitude 1 ($\beta = .190$), alcohol use 2 ($\beta = .152$), status value ($\beta = .134$), and personal attitude 2 ($\beta = .231$). Other sources of total effect were non-significant and included normative perception 1 ($\beta = .038$) and normative perception 2 ($\beta = .018$), as well as social identity/self-categorization ($\beta = .093$).

Effects On Personal Attitude 2 (PA2)

Direct effects. For White women all variables modeled to contribute to personal attitude were significant and direct in their effects: normative perception 1 ($\beta = -.079$) and normative perception 2 ($\beta = .076$), personal attitude 1 ($\beta = .449$), alcohol use 2 ($\beta = .411$), social identity/self-categorization ($\beta = .181$), and status value ($\beta = -.075$).

Indirect effects. Of the variables modeled to indirectly influence personal attitude 2, only status value ($\beta = .002$) was non-significant. Normative perception 1 ($\beta = .082$), personal attitude 1 ($\beta = .319$), alcohol use 2 ($\beta = .106$), and social identity/self-categorization ($\beta = -.032$) were all significant indirect contributors to personal attitude 2 for White women.

Total effects. The only non-significant total effects on personal attitude 2 came from normative perception 1 ($\beta = .004$). All other total effects from variables in the model were significant, including those from personal attitude 1 ($\beta = .769$), alcohol use 2

($\beta = .517$), social identity/self-categorization ($\beta = .149$), status value ($\beta = -.073$) and normative perception 2 ($\beta = .076$).

Effects On Normative Perception 2 (NP2)

Direct effects. Both normative perception 1 ($\beta = .505$) and alcohol use 2 ($\beta = .310$) were significant in their direct effects on normative perception 2. Personal attitude 1 ($\beta = -.108$) had a non-significant negative direct effect on normative perception 2, while status value ($\beta = .026$) and social identity/self-categorization were positive in their effects.

Indirect effects. Significant indirect effects on normative perception 2 were derived from normative perception 1 ($\beta = .044$) and personal attitude 1 ($\beta = .201$). Alcohol use 2 ($\beta = .023$) and social identity/self-categorization ($\beta = .012$) were positive but non-significant in their indirect contributions.

Total effects. Two sources, normative perception 1 ($\beta = .549$) and alcohol use 2 ($\beta = .333$), were significant in their total effects on normative perception 2. Personal attitude 1 ($\beta = .092$), status value ($\beta = .026$) and social identity/self-categorization ($\beta = .052$) had positive but non-significant total effects on normative perception 2.

Effects On Social Identity/Self-Categorization (SISC)

Direct effects. Only alcohol use 2 ($\beta = .498$) had a significant direct effect on social identity/self-categorization, although normative perception 1 ($\beta = .009$) and personal attitude 1 ($\beta = .103$) had non-significant direct effects.

Indirect effects. Both exogenous variables modeled to have an indirect influence on social identity/self-categorization offered significant indirect effects, normative perception 1 ($\beta = .057$) and personal attitude 1 ($\beta = .295$).

Total effects. Personal attitude 1 ($\beta = .339$) and alcohol use 2 ($\beta = .498$) both had significant total effects on social identity/self-categorization, while normative perception 1 ($\beta = .065$) had a non-significant total effect.

Effects On Status Value (SV)

Direct effects. For White women significant direct effects on status value derived from both social identity/self-categorization ($\beta = .476$) and from normative perception 1 ($\beta = .219$). Personal attitude 1 ($\beta = -.083$) and alcohol use 2 ($\beta = -.112$) offered negative non-significant effects.

Indirect effects. Personal attitude 1 ($\beta = .123$) and alcohol use 2 ($\beta = .237$) had significant indirect effects on status value for White women. Normative perception 1 ($\beta = .018$) was non-significant but positive in its indirect effects.

Total effects. Normative perception 1 ($\beta = .237$) and social identity/self-categorization ($\beta = .476$) had significant total effects on status value, while personal attitude 1 ($\beta = .040$) and alcohol use 2 ($\beta = .125$) offered non-significant total effects.

Effects On Alcohol Use 2 (AU2)

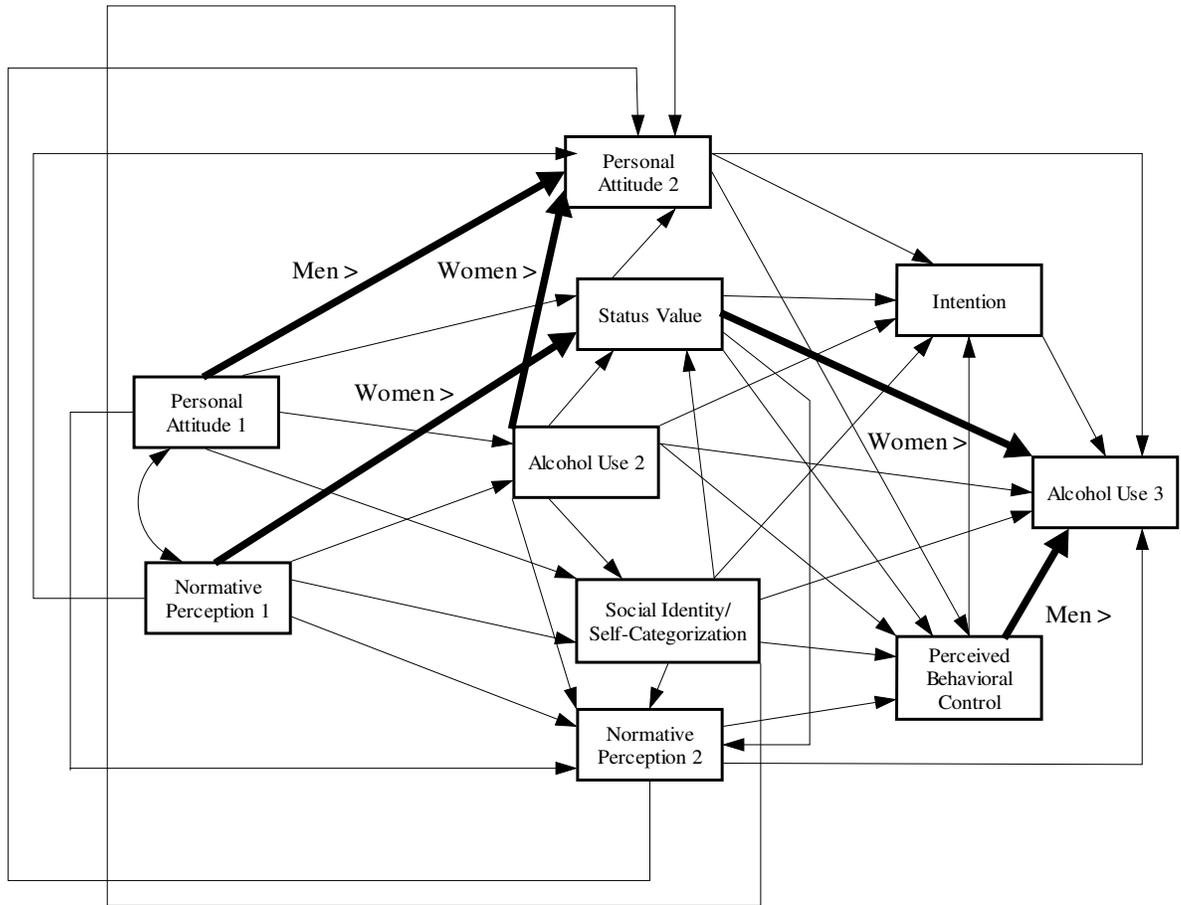
Total and direct effects. Both exogenous variables modeled to direct influence alcohol use 2 were significant in their effects, namely normative perception 1 ($\beta = .114$) and personal attitude 1 ($\beta = .592$).

Figure 4.9 illustrates the significant direct effects of the variables in the model on each subsequent variable for White women. Significant direct effects derived from normative perception 1, personal attitude 1, alcohol use 2, social identity/self-categorization, status value, normative perception 2, personal attitude 2, and intention.

attitudes, and alcohol use variables. However, there were also differences in the relationships of both normative perceptions and alcohol use at Time Three (AU3) to status values, as well as the relationship of perceived behavioral control and AU3

Women had three paths that were significantly greater than those of men: normative perception 1 to status value; alcohol use 2 to personal attitude 2; and status value to alcohol use 3. Men had two paths that were significantly stronger than those of women: personal attitude 1 to personal attitude 2, and perceived behavioral control to alcohol use 3. Figure 4.10 illustrates the significantly non-invariant paths (bold) in the analysis of White men and White women and which group had the stronger one.

Figure 4.10. Model Illustrating Significantly Non-Invariant Paths for White Men and White Women.



* $p < .05$

Note. Bold lines represent significant paths.

Summary of Analyses in Study

An examination of the model figures that represent significant direct and total effects for each racial-ethnic group in the first multigroup analysis and for men and women in the second analysis of White students separately reveals a number of general patterns. Significant total effects from model variables on subsequent variables were all positive in all groups except for Latino/Latina American students and Multiracial/Biracial

American students. For Latino/Latina students and Multiracial/Biracial students, social identity/self-categorization had both negative and positive total effects on later variables in the model. Additionally, there were only negative significant total effects from normative perception 2 and from status value for Multiracial/Biracial students. Further, status value offered significant total effects to other variables in the model only for Multiracial/Biracial students (negative effects) and for White students, specifically for White women (positive effects) when analyzed by gender. Similarly, perceived behavioral control offered significant total effects to the model only for White students, and more specifically for White men. Intention was a significant contributor to alcohol use 3 for White students only (White women, specifically) and Multiracial/Biracial students. Latino/Latina students and White men were the only groups for whom normative perception 2 offered no significant total effects to subsequent variables, whereas for most other groups (including the general analysis of White students) total effects were significant and positive and for Multiracial/Biracial students total effects from normative perception 2 were significant but negative.

In the racial-ethnic group analysis White students had significant total effects on alcohol use 3 from all variables in the model, but when analyzed separately White women had no significant total effects from perceived behavioral control and White men had no significant total effects from intention, status value or normative perception 2. In fact, White men were the only group that had significant total effects from perceived behavioral control. Similar to White men, African American/Black students, Asian Pacific American students and Latino/Latina students had no significant total effects from status value or intention.

Examination of the model figures previously introduced to illustrate significant paths for each group in both analyses reveals that White women had the most number of significant paths (21) and the White group in the racial-ethnic analysis the next most (20). Other groups were substantially lower in the number of significant paths in the model, with 11 for Asian Pacific American students and 12 for African American/Black being the lowest. Latino/Latina students and White men each had 13 significant paths in the model and Multiracial/Biracial students 14.

White men were the only group to have significant direct effects from perceived behavioral control to any variable, specifically alcohol use 3. In the analysis by gender of White students this path was significantly non-invariant, with White men have a stronger contribution from perceived behavioral control to alcohol use 3 than White women. White women were the only group to have significant direct effects from status value to other variables, namely to alcohol use 3 and perceived behavioral control. Their path from status value to alcohol use 3 was significantly non-invariant in the analysis by gender for White students, and stronger than the path for White men. None of these three paths were found significant in the combined analysis of White men and women for the racial-ethnic groups analysis. The path from personal attitude 1 to status value was also not significant for White students in the racial-ethnic groups analysis. However, when data for White students were analyzed separately by gender, this path was significant for White women and significantly non-invariant, with White women having a stronger contribution from personal attitude 1 to status value. The path from normative perception 1 to status value was also significantly non-invariant for White men and White women, with White women having a stronger path, one that offered significant contributions.

Personal attitude 1 and personal attitude 2 offered significant direct effects on subsequent variables for all groups in both analyses, with White and African American/Black students having a stronger (significantly non-invariant) relationship between these two variables than Asian Pacific American or Multiracial/Biracial students. Latino/Latina students were the only group for whom the path from personal attitude 1 to personal attitude 2 was non-significant. Normative perception 1 had significant direct effects on personal attitude 2 only for White students in the racial-ethnic groups analysis, yet when White students were analyzed separately by gender the path from normative perception 1 to personal attitude 2 was non-significant for both groups. In contrast, personal attitude 1 contributed significant direct effects to normative perception 2 for all groups but Asian Pacific American students. The path from normative perception 1 to normative perception 2 was significant for all groups except Latino/Latina students and African American/Black students for whom significant contributions to normative perception 2 were through alcohol use 2. The path from normative perception 1 to alcohol use 2 was significantly non-invariant in the racial-ethnic groups analysis, with Multiracial/Biracial students having a stronger path than did Asian Pacific American students or White students.

Alcohol use 2 contributed significant direct effects to personal attitude 2, normative perception 2, and to alcohol use 3 for all groups and to social identity/self-categorization for all groups except Asian Pacific Americans. The alcohol use 2 to normative perception 2 path was significantly non-invariant, with African American/Black students having a stronger path than Latino/Latina and White students. In the racial-ethnic groups analysis, African American/Black students had a stronger

contribution from alcohol use 2 to alcohol use 3 than Asian Pacific American or White students. The path was significantly non-invariant. Social identity/self-categorization offered a significant path to status value for all groups. Its contribution to normative perception 2 was stronger for all students than for Latino/Latina students for whom direct effects were significant but negative, and the path was significantly non-invariant between racial-ethnic groups. Personal attitude 2 contributed significantly to intention for all groups. For White students, specifically White women, personal attitude 2 also significantly contributed to and perceived behavioral control. Intention contributed significantly to alcohol use 3 only for Multiracial/Biracial students and for White students in the racial-ethnic groups analysis. When analyzed by gender for White students, only White women had this significant path.

CHAPTER FIVE

DISCUSSION

This chapter provides discussion of the model and findings related to racial-ethnic group, to gender among White students, and to constraints between groups in both analyses. The chapter first presents an overview of study findings. A discussion of variable means and mean differences by group as well as variable correlations by group precedes discussion of model findings, as does the discussion of the study sample in comparison to state and national samples. Presented next are findings related to each of the four research questions, implications for policy and practice, implications for theory, implications for research, and study limitations. A summary statement is provided at the end of the chapter.

In order to assist the reader and provide more intuitively recognized language, the variable names used to this point will be altered according to the list below unless there is a compelling reason not to do so (e.g., in mean differences, path identifications, effects). The formal construct name is in parenthesis next to the preferred language for this chapter: precollege attitude (personal attitude 1); precollege perception (normative perception 1); fall attitude (personal attitude 2); fall perception (normative perception 2); summer alcohol use (n/a); fall alcohol use (alcohol use 2); spring alcohol use (alcohol use 3); social identity (social identity/self-categorization); desire for social prestige (status value); perceived pressure (perceived behavioral control); drinking intention (intention).

Discussion of Variable Means, Standard Deviations, and Mean Differences

The following highlights discussion of the means, standard deviations and mean differences between groups for each variable (some at two points in time).

Alcohol Use Summer and Fall

Consistent with previous studies, White students reported the highest alcohol use and Latino/Latina student use just below that group (IOM/NRC, 2003) at fall data collection. Multiracial/Biracial students reported alcohol use just below that of Latino/Latina students in the fall, followed by Asian Pacific American students' alcohol use and African American/Black students' use. Further, African American/Black students reported alcohol use significantly lower than that of Latino/Latina, White and Multiracial/Biracial students at that point. Asian Pacific American students' reported use was significantly lower than that reported by White students as well.

By the spring data collection, alcohol use had changed among the groups with use having diminished among Latino/Latina students and Asian Pacific American students and remained constant among Multiracial/Biracial students. Reported alcohol use increased among White students and among African American/Black students. Alcohol use by African American/Black students had increased relative to the drop from Latino/Latina students and Multiracial/Biracial students such that there was no longer a significant difference then in use by these groups. Alcohol use reported by African American/Black students in the spring and by White students then continued to be significantly different. The findings suggest the vulnerability of these African American/Black students enrolling in a predominantly White state institution where alcohol use is generally higher among most other students, despite their somewhat more conservative attitudes in the fall than summer. The standard deviation of mean alcohol use was less from Time One to Time Two for all groups except for African American/Black students for whom the gap grew wider.

Personal Attitude Summer and Fall

White and Multiracial/Biracial students had the most permissive attitudes toward drinking pre-college, as they did in the fall, followed by Latino/Latina students, Asian Pacific American students and then African American/Black students. African American/Black students had a significantly lower personal attitude toward risky alcohol use at both pre-college and fall data points than White students and had a significantly lower personal attitude in the fall than Multiracial/Biracial students and Latino/Latina students. Asian Pacific American students had significantly less permissive attitudes than White students did at both points in time as well. Personal attitude scores rose from summer to fall for all groups except African American/Black students for whom they dropped slightly. A somewhat larger standard deviation was found in the fall than in the spring on this indicator for all groups except Asian Pacific American students for whom it stayed about the same. These findings suggest a campus environmental influence on fall drinking attitude for all students except Asian Pacific American students.

Normative Perception Summer and Fall

Among all racial-ethnic groups the mean for normative perception increased somewhat from summer to fall and the standard deviation diminished suggesting that there was a move toward a more uniform view of others' drinking, approval of drinking, and subjective norm of friends' expectations for drinking. Normative perception 1 was significantly different between White and African American/Black, Asian Pacific American and Latino/Latina American students. By fall there was no significant difference between Latino/Latina and White students on normative perception 2 even

though means for both groups increased, suggesting a growing similarity in those perceptions between the two groups and a potentially increased influence source.

Social Identity/Self-Categorization

Social identity/self-categorization, measured in the fall, was strongest for White students, as might be expected given their majority status on campus, followed by Latino/Latina, Asian Pacific American, and Multiracial/Biracial students and then African American/Black students. All groups except Latino/Latina were significantly lower than White students in their average reported social identity/self-categorization, suggesting perhaps a lower identity with drinking among African American/Black students, Asian Pacific American students, and Multiracial/Biracial students, an explanation that makes sense given the Latino/Latina drinking rate reported was second only to that of White students. Perhaps these students, many of whom reported that they had a foreign born parent or were foreign born themselves, are not as likely to identify with the campus or its associated drinking. The only significant mean differences on scores for White men and White women on a given construct was the one for social identity/self-categorization. White women were significantly higher in their reported scores than men, suggesting perhaps a greater importance of identity and relationships for them.

Status Value

Interestingly, status value mean was highest among Asian Pacific American students, followed by Latino/Latina students, then African American/Black students, White students, and finally Multiracial/Biracial students. In the tests of mean differences, Asian Pacific American students had a significantly higher mean for status value than did

White or Multiracial/Biracial students. However, correlation of status value with subsequent variables in the model for Asian Pacific American students was lowest of all groups, suggesting that for this group generally, their sense of status or social prestige on campus may be more associated with something other than drinking.

Perceived Behavioral Control

Asian Pacific American and Latino/Latina students reported the least (scored as most risky) perceived behavioral control. White and Multiracial/Biracial students were next in their reported perceived behavioral control, and African American/Black students reported the strongest perceived behavioral control (reported as least risky). African American/Black students' reported perceived behavioral control was significantly different from that reported by Asian Pacific American students. Except for the Asian Pacific American students, the highest risk drinkers reported the least (most risky) perceived behavioral control. Asian Pacific American students, however, reported the most risky perceived behavioral control but lowest levels of drinking. They also had the greatest standard deviation in perceived behavioral control. It may be that these students feel the most uncertain about their drinking choices in a new environment. African American/Black students, on the other hand, reported the least risky perceived behavioral control, perhaps suggesting certainty of their choices.

Intention

Drinking intention was highest among White students, as might be expected given their highest reported alcohol use, followed by Latino/Latina and Multiracial/Biracial students, also likely a reflection of their earlier alcohol use and well developed intentions (Ajzen, 2002b). Asian Pacific American students reported the next lowest drinking

intention and African American/Black the lowest. Drinking intention of African American/Black students was significantly different from that of Latino/Latina, White, and Multiracial/Biracial students suggesting an increased vulnerability of the latter three groups for spring alcohol use. Ajzen has suggested that intentions may not be well developed where previous behavior contributes significantly to later behavior. It may be that some racial-ethnic groups have not developed strong intentions and that they are uncertain regarding choices they will make around drinking, and may be ambivalent as they enter a new campus. This is a reason to target these groups with prevention efforts that may be different from those of White students, Latino/Latina, and Multiracial/Biracial students.

Demographics of the Sample

The study examined questions of differences in the contributions of the specific variables to explanation of alcohol use by racial ethnic group, and, in the case of White students, by gender. Race and ethnicity have been examined infrequently in the literature on college alcohol use except in terms of prevalence, but less often as a conditional variable in prediction or explanation of use from other variables. Studying the role of race and ethnicity in such predictions or explanations, however, is far from clear-cut. It is important to recognize and acknowledge that there are elements that may covary with racial-ethnic group that may, in essence, be masked in a study such as this one. For instance, in Chapter 4 it was evident that a substantial proportion of the students of color were either themselves foreign born or had at least one parent who was foreign born. This finding suggests that there may be an underlying element of culture within those racial-ethnic groups that is somehow different not specifically because of race and ethnicity but

because of family origin and culture. Similarly, socio-economic status may be masked by the study of groups by racial-ethnic identification. More students of color reported coming from families whose annual incomes were under \$50,000 and whose parents both had less formal education. Within racial-ethnic groups previous use history may also be masked. Take for example, the finding that more Latino/Latina students had consumed alcohol at age 12 or younger and more had been intoxicated by 15 or younger. Together, these demographic relationships are reminders that other elements, other conditional variables, are important to examine, those such as socio-economic status, past use of alcohol, and generation status in this country. At the same time, this study does provide some insight into tendencies among racial-ethnic groups with a similar profile of SES, generation status, and past alcohol use, and thus can assist in targeting some prevention and intervention efforts, and can aid research toward more complex questions and group analyses.

Comparison of Study Sample with National and State Samples

Despite substantial attrition over the course of the present study, the data reflected the general drinking patterns of comparable national and state study samples. The *2004 Maryland Adolescent Survey* (MAS) was conducted during the year when the participants for the present study were in 12th grade in high school; because many students in the study are also from Maryland, they were the cohort examined in the 2004 MAS, making the findings more proximal. Twenty-nine percent (29%) of the final participants for this study and 29% of the MAS 12th grade participants (college bound and non-college bound) reported having consumed 5 or more drinks on one occasion in the past two weeks. Similarly, in the *2002 Monitoring the Future* study (Johnston, O'Malley,

Bachman, & Schulenberg, 2003), a nationally normed study of middle and high school students, 28.6% of them reported drinking 5 or more drinks on one occasion in the past two weeks. Somewhat higher, 42% of 18-20 year old college students in *the National Household Survey on Drug Abuse* (NHSDA, in IOM/NRC, 2003) reported this behavior; the American College Health Association's *National College Health Assessment* (ACHA-NCHA, $N > 54,000$) reported this behavior for 40% of college students in their study; and CORE researchers reported 46% of their college aged sample reporting it (CORE Institute, 2006). The present study sample is entering first-year students, slightly older and more experienced perhaps than the 12th grade students and slightly younger and less experienced than the wider college population. On this measure of heavy drinking, the several studies demonstrate comparability across their separate study samples, and comparability of the final sample for the current study with those used in other research, despite the differences among the three sub-samples (Time One; Times One and Two; and Times One, Two, and Three) on the study campus related to participation.

The reported past month alcohol use of the students in this study is comparable to that reported in the other surveys as well, with 12th graders reporting slightly lower rates of past month (30 days) use and the general college sample in the ACHA-NCHA reporting slightly higher rates. Again, this illustrates the entering first-year students in the study sample as somewhere between these groups, as expected, probably partly an indicator of use and age differences and maybe in part attributable to the 28 days (4 weeks) versus 30 days (month) measured.

The comparison of nationally normed studies like *Monitoring the Future* and the NHSDA with an in-state study of the age cohort and two nationally administered, large

sample surveys (CORE and NCHA) provides evidence of overall comparability of the study sample to the larger population of first-year students. Table 5.1 highlights the comparisons of heavy (5+) drinking and past month drinking between the samples from the study campus and samples from state and national samples.

Table 5.1

Comparison of Drinking Quantity and Frequency Between Survey Participants Across Survey Times and Samples in State and National Comparison Surveys

Survey	5+ drinks in previous 2 weeks once or more	Drank alcohol in the last month
Time One UNSC	39%	63.7%
Time One & 2 UNSC & Univ Name Social Life	36.3%	63.7%
Time One, 2, & 3 UNSC & Univ Name Social Life fall and spring	29%	60%
2004 Maryland Adolescent Survey 12 th graders	29% (past month)	44%
Monitoring the Future 2003 12 th graders	28.6%	48.6%
NHSDA 18-22 year old college students	41%	na
CORE college students	45.3%	72%
National College Health Assessment (ACHA-NCHA)	40%	68.6%

Model Overview Findings

This study was a multigroup analysis by race using path analysis, more specifically using measured variable structural equation modeling with EQS 6.1 software (Bentler, 2004). The initial model was an acceptable fit for all racial-ethnic groups in the study (i.e., African American/Black, Asian Pacific American, Latino/Latina American, White American, and Multiracial/Biracial American) and for men and women in the analysis of White students by gender. It explained between 60% and 92% of the variance in spring alcohol use (i.e., alcohol use 3) for all groups analyzed. When tested across the racial-ethnic groups in the first multigroup analysis, most paths were invariant, suggesting common paths across groups in most instances, despite differences in significance of indirect, direct and total effects. However, a closer look at White students, who were the largest group in the race-ethnicity analysis, allowed a somewhat different view. The group of White students was analyzed by gender, the only racial-ethnic group large enough to allow such analysis. In that analysis, while most paths were again invariant, there were paths that were significantly non-invariant that were not distinguishable as such in the analysis combining both men and women. Again, there were a number of instances in which the paths were invariant but the effects may have been significant for one group and not the other. The study provides perspective on the role of race-ethnicity in alcohol use during the first year of college and its contributing variables, and, for White students, an examination of the role of gender in alcohol use and related variables.

Findings Related to Research Questions

Four research questions are re-capped here from earlier chapters. Research question one addresses the variance of spring alcohol use, the final endogenous variable explained by the model. Question two addresses the direct, indirect and total effects of the variables for the different groups. Question three examines the potential avenues for risk or protection by racial-ethnic group and by gender for the second multigroup analysis. Finally, question four addresses whether or not there may be common sources of risk or protection for these groups that could be the focus of intervention or prevention efforts.

Research Question One:

Is the total variance in alcohol use 3 explained different among the different racial-ethnic subgroups? For White women versus White men?

Total variance in spring alcohol use explained by the model was substantial for all groups analyzed, ranging from a low of 60% for Asian Pacific American students to a high of nearly 92% for African American/Black students. For Multiracial/Biracial students, total variance in spring alcohol use explained by the model was 84%, whereas for White American students it was 66% and for Latino/Latina American students 65%. Among White students, total variance explained was 63% for White women and 76% for White men. The finding suggests that the role of peer context in alcohol use among first-year college students or the elements needed to measure that peer context vary by racial-ethnic group and, for White students, by gender.

The different amounts of variance in spring alcohol use explained among the groups also suggests that for some groups with a lower amount explained, elements

outside the model (e.g., family expectations, access to and availability of alcohol, religious beliefs) may be more important considerations than for others. There may have been differences in the quality of the construct measures for a given subgroup by race-ethnicity or gender, limiting the explanatory ability of the model for certain groups due to group-specific measurement error; in other words, measures may not have been as capable of measuring a construct for some groups as they were for others. With a larger sample size, a latent variable model could demonstrate the contribution of specific items to an underlying construct, including the significance of it for one group and not another, for example. This study using measured variables due to sample size restrictions did not allow for that. By using latent variables rather than measured ones, it is likely the model could account for more variance in spring alcohol use among all groups than it did in this study because of the capacity of latent SEM to account for error in the model, thus in some ways overcoming limits of the observed measures. If that were true, it could suggest even more strongly the contribution of peer-related variables in explaining alcohol use among first-year students, perhaps highlighting more clearly potential avenues for prevention and paths to high risk use of alcohol.

On the other hand, that fall alcohol use was included in the model as the first endogenous variable likely increased the explanation of variance spring alcohol use since past behavior is a generally accepted “best predictor of future behavior” (Ajzen, 2002b, p. 107), depending in part, according to Ajzen, on compatibility measures of intention and behavior and on strong, well-formed intentions and realistic plans for acting on an intention. This measure is not frequently included in models, but Ajzen has suggested that including prior behavior in a model can improve prediction (or explanation) of later

action, “particularly when intentions are weak and unstable, when underlying expectations [beliefs] are inaccurate, or when people have not developed a clear plan of action” (p. 120), noting that when these conditions are eliminated, the significant residual effect of past behavior after controlling for intention is generally no longer significant. As Ajzen suggests, adding past behavior does not add directly to the theoretical explanation of a behavior but can help researchers understand other variables between beliefs (e.g., normative) and behavior. More discussion of these ideas will be presented later.

Not all other elements in the model were available at Time One so they could not be examined as contributors to fall alcohol use. Additionally, the theories applied in the study, specifically, social norms theory and the theory of planned behavior, started with normative perception and personal attitude as the exogenous variables. The question of the extent to which other elements in the model could account for variance in fall alcohol use across the groups if measured at Time One and prior to Time Two (say 1b), or what elements not included in the model might account for fall alcohol use remains unknown.

Research Question Two:

What direct, indirect and total effects are there on each endogenous variable in the model for each racial-ethnic group and for White men and White women?

Do they differ in size, direction, or statistical significance by subgroup?

When each path was tested across groups, in each of the two multi-group analyses (i.e., by race-ethnicity; by gender for White students), most paths were invariant (i.e., not significantly different). Six of the paths were significantly different (i.e., were significantly non-invariant) in the race-ethnicity analysis, and five were significantly non-invariant (different) in the gender analysis for White students. Discussion below is

organized by multi-group analysis and by endogenous variable, starting with race-ethnicity and the first endogenous variable, alcohol use 2. The questions regarding effects from a variable, and effect size, direction, and significance are addressed within variable sections and are discussed in terms of tests of invariance and effects hypothesized to contribute to each variable.

Racial-Ethnic Group Analysis

Effects on alcohol use 2. Two exogenous variables, normative perception 1 and personal attitude 1, were modeled to have direct effects on alcohol use 2; no indirect effects were modeled. The variables explained a low of 39% for African American/Black students and high of 58% for Multiracial/Biracial students of the variance in alcohol use 2; for Asian Pacific American students the variables explained 48% of the variance in alcohol use 2, for 50% for Latino/Latina students, and 49% for White students. These findings suggest perhaps a greater consistency of alcohol use from pre-college to fall for Multiracial/Biracial students than for African American/Black students, a consistency captured through normative perception 1 and personal attitude 1. Multiracial/Biracial students demonstrated a consistency in self-reported alcohol use from fall to spring, a 2.10 at each point in time, so this explanation is plausible.

Among all racial-ethnic groups personal attitude 1 produced significant positive direct/total effects on alcohol use 2. Normative perception 1 had a positive and significant effect on alcohol use 2 for all groups except Asian Pacific American students for whom it was non-significant. Further, this path from normative perception 1 to alcohol use 2 was significantly non-invariant (differed significantly) among groups, with Multiracial/Biracial American students having a stronger relationship from normative

perception 1 to alcohol use 2 than either White students, for whom the relationship was significant, or Asian Pacific American students, for whom it was not significant. These findings suggest the increased vulnerability of Multiracial/Biracial students to their perception of others' drinking, others' attitudes toward drinking, and the expectation of friends on their own drinking patterns. For Asian Pacific American students the findings suggest a lesser contribution from normative perception 1 to alcohol use 2, with personal attitude 1 perhaps serving as a protective mechanism for them.

Within each group for African American/Black and Multiracial/Biracial American students, and to some extent Latino/Latina American students, the contribution of personal attitude 1 to alcohol use 2 was generally comparable to that group's contribution of normative perception 1 to alcohol use 2. The findings related to effects of these two variables on alcohol use 2 suggest that Asian Pacific American students may be less vulnerable to the influence of their pre-college normative perceptions 1 on their fall term alcohol use 2. Likewise, the similarity of contribution within each group of normative perception 1 and personal attitude 1 for African American/Black students, Multiracial/Biracial students, and Latino/Latina students may leave these students more vulnerable to their perceptions of others' alcohol use, others' attitudes toward use, and the expectations of their friends. Without knowing the difference and direction (positive or negative) between their descriptive (actual behavioral) normative perceptions and the actual behavioral norm, social norms campaigns advocated through social norms theory (Perkins & Berkowitz, 1986; Perkins, 2003) and which publicize actual drinking norms have the potential to inadvertently increase the normative perception of students in these racial-ethnic subgroups on predominantly White campuses, and thus potentially increase

their subsequent alcohol use. This finding is consistent with the concern Keeling (1999, 2000), Wechsler et al. (2003), and Campo et al. (2003) have expressed regarding such campaigns.

At the same time, the variable used in this study included not only descriptive (actual) and injunctive (approval) (Bosari & Carey, 2003) normative perceptions use in social norms theory (Perkins & Berkowitz, 1986), but also subjective norms from the theory of reasoned action/planned behavior (Ajzen, 1985, 1991). Subjective norms in this study are one's perceptions of what one's close friends expect in terms of quantity and frequency of drinking. More study is needed to discern the effects of each type of normative perception, descriptive, injunctive and subjective. It is also possible that for these and other groups, subjective norms of friends could play a protective role or increase one's risky use of alcohol, consistent with Campo et al. (2003) and Trockel et al. (2003).

Effects on social identity/self-categorization. Three variables were hypothesized to contribute to social identity/self-categorization, specifically, normative perception 1, personal attitude 1, and alcohol use 2. Those variables accounted for between 24% (Asian Pacific American) and 35% (Latino/Latina American) of the variance in social identity/self-categorization. None of the three paths to social identity/self-categorization were significantly non-invariant when tested across groups. However, there were differences among groups in whether the variables provided significant effects or not. For all groups except Asian Pacific American students, the direct/total effects of alcohol use 2 on the social identity/self-categorization were significant suggesting that for Asian Pacific American students alcohol use and identity with campus are not associated as

strongly as for other racial-ethnic groups. The role of acculturation for non-White groups on a predominantly White campus may be important in further understanding the relationships among these variables. Studies have demonstrated that acculturation or “losing behaviors specific to one’s minority culture” (Landine & Klonoff, 2004, p. 546) may play a role in alcohol use among groups with high numbers of recent immigrants like Asian Pacific Americans and Latino/Latinas as well as among African American/Black persons who may have been protected from the dominant White culture in their neighborhoods, churches, and families (Landine & Klonoff).

The effects of normative perception 1 on social identity/self-categorization were significant for some groups and not for others. For African American/Black, Asian Pacific American and Latino/Latina American students there were no significant direct, indirect or total effects from normative perception 1. Further, the direct effects for Latino/Latina students were negative and the indirect effects positive, resulting in a slight positive total effect and suggesting that campus environment as experienced through alcohol use 2 plays an important role for these students. For Multiracial/Biracial students, there were negative direct effects from normative perception 1, positive and significant indirect effects, and a non-significant total effect. This finding implies that for Multiracial/Biracial students a higher normative perception 1 contributes to a less strong social identity/self-categorization, a potentially protective relationship not significantly diminished by the indirect significant effects through the environment of alcohol use 2. For White students, normative perception 1 had a significant indirect effect on social identity/self-categorization but did not produce a significant total effect. For White

students, it may be that normative perception 1 and social identity/self-categorization are so similar that no additional contribution resulted.

Personal attitude 1 also produced significant effects on social identity/self-categorization for some groups and not for others. For African American/Black students, this variable had no significant effects on social identity/self-categorization, whereas for White students the direct, indirect and total effects were significant. For Asian Pacific American students the direct and total effects were significant, suggesting that riskier personal attitude was related to a strengthened social identity/self-categorization for these students, whereas for Latino/Latina students it was the indirect effect through the environment of alcohol use 2 the and total effects that were significant. The indirect significant effects of personal attitude 1 for Multiracial/Biracial students were countered by a non-significant direct effect and produced non-significant total effects.

It is not possible to determine the role of the various elements of social identity/self-categorization (i.e., identification with friends, other students, or home friends and family) from the path analysis conducted, so the inferences that can be drawn from this analysis are limited without further research. Findings suggest that increased alcohol use significantly increases one's sense of social identity/self-categorization for most students, but that somehow Asian Pacific American students in the study were different in this regard. For White students social identity/self-categorization had multiple significant direct and indirect effects, whereas for other students, this was not the case, not surprising since White students are the dominant racial-ethnic group on campus and may more readily than other groups identify with the "typical" student reflected in a number of the measures for this variable as called for by previous research

(Hains et al., 1997; Turner, 1985). The findings suggest that for Asian Pacific American students their own attitudes about drinking are closely tied to their social identity/self-categorization, but for them there is limited contribution from their views of others behaviors and behaviors, or perceptions of what their friends expect, or even from their own alcohol use. On the other hand, for African American/Black students, Latino/Latina students and Multiracial/Biracial students, the findings suggest the importance of their choices about alcohol, perhaps related to campus environment and friendship groups, in contributing to their social identity/self-categorization. Taken together the findings produce a view of social identity/self-categorization as a widely different experience for the different groups of students, but more research is needed in order to be able to more clearly discern the relationships between the various aspects of social identity/self-categorization, the variables hypothesized to effect it, and the role of race-ethnicity in those effects.

Effects on status value. Four variables were modeled to have direct effects on status value, namely, personal attitude 1, normative perception 1, alcohol use 2, and social identity/self-categorization, and all but the last were modeled to have indirect effects as well. Together the variables explained between 11% (Asian Pacific American) and 25% (Latino/Latina) of the variance in status value. For African American/Black students the model explained 18% of the variance in status value, for Multiracial/Biracial students nearly 19%, and for White students almost 22%. Although this is a relatively low level of explanation, it is important to recall that a single survey item represented status value, unlike all other variables in the model that were developed from multiple items. Each path to status value was tested consecutively across groups and tested. None

of these four paths was significantly non-invariant across groups; in other words, none differed significantly.

Social identity/self categorization was the only variable modeled to have only direct/total effects. It produced significant positive effects on status value for each group. No other path was uniformly significant among groups. This moderate significant effect suggests that the greater a student's social identity/self-categorization, the more that student also values having social prestige on campus. Ridgeway (2000) has argued that social identity has influence through a perception of likeness or similarity and status value through a perception of competence. When the campus milieu structures social status or "prestige," as Ridgeway has called it, around the belief that most people think that the students who drink at least sometimes have the most social prestige (Snyder & Sedlacek, 2003), a stronger desire for status could increase one's vulnerability to influences toward alcohol use. This explanation is compatible with a recent finding not yet theoretically explained that smoking and popularity were associated among middle school students (Valente, Unger, & Johnson, 2005). Findings in the present study further suggest that for all racial-ethnic groups in this investigation at a predominantly White institution, identifying as similar to the "typical" student may contribute to one's desire to be seen as having social "prestige" or "competence," status as operationalized by Ridgeway and Erikson (2000).

Other variables had less consistent significant effects than social identity/self-categorization on status value. Normative perception 1 had no significant effects on status value for any group except White students. Rather, for African American/Black students personal attitude 1 produced significant direct and total effects on status value

but no significant indirect effects. The finding suggests that the more liberal (i.e., risky, increased, permissive) the alcohol use 2 fall term for African American/Black, the greater their vulnerability to shifts in their more conservative attitudes toward those more liberal ones of other students, particularly since theirs initially are the most conservative of the five racial-ethnic groups in the study. This shift of attitudes toward conformity (Cartwright & Zander, 1968) with the actual, higher normative attitude is found in other research as well (Perkins, 2003). Significant effects on status value for Latino/Latina students derived also from alcohol use 2 indirectly through social identity/self-categorization, and from the total effects of personal attitude 1. This finding suggests contributions to their desires for social status, perhaps increasing their vulnerability to its potential association with drinking (Snyder & Sedlacek, 2003). The only source of significant effects for Multiracial/Biracial students aside from the one shared by all groups was the total effect of alcohol use 2, suggesting that actual drinking and its impact on social identity/self-categorization are both important considerations in understanding this group and the effects of alcohol use on status value. Finally, for Asian Pacific American students, there were no additional significant effects on status value. For these students it appears that their social identity/self-categorization is the key contributor to their value of status and that whether they identify with their “typical” friend, the “typical” student or have substantial connections to home relationships may shape their status desires.

White students had the numerous sources of significant effects on status value, including not only direct effects from social identity/self-categorization as discussed previously for all groups, but also direct and total effects from normative perception 1,

indirect effects from personal attitude 1, and indirect and total effects from alcohol use 2. The significant effects of normative perception 1 for these students suggests that the more they think others drink, the more liberal (i.e., risky) they think others' attitudes toward drinking are, and the more they perceive their friends expect them to drink or get drunk, the more they desire social status. Valuing social status could contribute to increased alcohol use, as mentioned previously, since a status mechanism appears to be in operation around drinking alcohol in the campus culture (Snyder & Sedlacek, 2003). For this group of students, correcting misperceptions of the various types of norms—including norms around the extent to which “most people” (Ridgeway, 2000, p. 82) see drinking as socially prestigious— if they exceed actual behavior, could be an important way to reduce a desire to be seen as socially prestigious or competent fueled by a status mechanism grounded in beliefs about alcohol use.

Effects on normative perception 2. Five variables were modeled as direct and indirect contributors to normative perception 2 and accounted for between 33% of its variance for Multiracial/Biracial students and 59% of its variance for Latino/Latina students. Nearly 54% of variance in normative perception 2 was accounted for among African American/Black students, 49% among Asian Pacific American and 44% among White American students. Three of the five paths to normative perception 2 were significantly non-invariant (differed significantly) among the groups, while for other variables in the model there was a maximum of one such path. The three paths were from alcohol use 2, social identity/self-categorization, and personal attitude 1. One might infer from the substantial difference in contributions to normative perception 2 that the specific campus environment in which students choose to associate plays an important

role in shaping their perceptions of others' use, others' attitudes and the expectations their friends have for them to drink or get drunk. An example of this is the choice of major or friends or residence, one's "self-selection" into a campus environment as Astin (1993) has referred to it. More research is needed in order to understand and confirm this phenomenon and its role in alcohol use among students.

Alcohol use 2 had a significant direct effect on normative perception 2 for all groups, with African American/Black students having a significantly larger path coefficient than that of Latino/Latina or White students. In fact, for this group it was by far their largest direct effect, whereas for Latino/Latina and White students, there were stronger direct effects from other variables. It may be that for African American/Black students their actual use of alcohol plays the most important role in their views of others' use and others' attitudes, as well as their friends drinking expectations of them due to increased exposure to alcohol use. It also suggests that Latino/Latina and White students' normative perceptions in the first term of college may be more vulnerable to more sources of influence. No group had significant indirect effects from alcohol use 2, and for Latino/Latina students the total effects were non-significant, unlike the other groups for whom they were significant. That there were no significant indirect effects, even for White students as the dominant group, is interesting given the contribution of the very public demonstration of alcohol use to increased normative misperceptions that has been argued from the perspective of social norms theory (e.g., Perkins, 1997).

Latina/Latino students differed significantly from other groups on another path that was significantly non-invariant among groups. The path from personal attitude to normative perception 2 was significant and negative for all groups but Asian Pacific

American and Latino/Latina students. For Asian Pacific American students it was negative but non-significant and for Latino/Latina students significant and positive. African American/Black, Asian Pacific American and White students had significant indirect effects on normative perception 2 from personal attitude 1. Total effects of personal attitude 1 to normative perception 2 were significant only for Latino/Latina and Asian Pacific American students. Latino/Latina students were the only group with significant positive direct effects that were also significantly greater than those of all other groups.

The finding suggests that for Latino/Latina students, a more liberal (risky) pre-college personal attitude 1 toward drinking contributes to an increase in normative perception 2 in the fall of the first year of college. In contrast, for the other groups the finding suggests that having more a liberal attitude toward drinking means a less liberal normative perception. One explanation for this could be that among students with more liberal attitudes, the perception is that their friends do not *expect* them to drink but that they themselves *choose* to drink. Additionally, it has been found that among some students with high-risk attitudes toward drinking, there is less discrepancy between their own alcohol use and their normative perceptions of others' attitudes and use (Carter & Kahnweiler, 2000).

Normative perception 1 produced significant total effects on normative perception 2 among all groups, the only variable to do so for normative perception 2, suggesting a consistency of contribution from an earlier to a subsequent version. For Multiracial/Biracial and White students, the indirect and direct effects of normative perception 1 on normative perception 2 were significant, and for the African

American/Black students the indirect effects only, for Asian Pacific American students only the direct effects, and for Latino/Latina only the total effects. Together these findings suggest more sources of contributions to normative perception 2 for groups with significant indirect effects. The significant total effects for Latino/Latina students points to a more malleable normative perception 2, open to more sources of influence, one that may be harder to change with a social norms campaign because of the singular focus of such campaigns.

Two other variables were modeled to contribute to normative perception 2. Social identity/self-categorization produced no significant effects for any group except Latino/Latina students for whom both total and direct effects on normative perception 2 were negative and significant. Further, this was a path that was significantly non-invariant (differed) across groups, with social identity/self-categorization having a significantly lesser effect on normative perception 2 for this group than for the others. Although it is unknown from this study on what indicators or sub-scales Latino/Latina American students differed from other students, it is evident that understanding the elements of social identity/self-categorization for this group versus other students is important, something a larger sample size and latent variable SEM could accommodate.

Finally, status value produced no significant effects on normative perception 2 for any group in the analysis by race-ethnicity.

Effects on personal attitude 2. Normative perception 1, personal attitude 1, alcohol use 2, social identity/self-categorization, and status value were all modeled to have direct and indirect effects on personal attitude 2. Normative perception 2 was modeled to contribute only direct/total effects. Thus, six paths were hypothesized to

contribute to the explanation of variance of personal attitude 2. When tested across groups, the path from personal attitude 1 to personal attitude 2 was significantly non-invariant. It was consistently positive and significant in direct effects for each group, with the riskier effects significantly stronger for African American/Black students than for Asian Pacific American or Multiracial/Biracial students. Similarly, the path was also significantly stronger for White students than for Asian Pacific American or Multiracial/Biracial students. This path, then, was significantly non-invariant in four of its tests of invariance. This finding suggests greater consistency in the relationship of personal attitude 1 and personal attitude 2 for African American/Black and White students versus Asian Pacific American and Multiracial students.

Personal attitude 1 offered significant total and direct effects on personal attitude 2 for all groups, and significant indirect effects for all groups except African American/Black students. That indirect effects were non-significant for African American/Black students suggests their attitudes may be less open to influence from external sources from Time One to Time Two than those of other students. Alcohol use 2 offered significant total and direct effects on personal attitude 2 across all groups, while only Latino/Latina and White students had significant indirect effects. The consistent significant effect of alcohol use 2 suggests that for all racial-ethnic groups, increased use of alcohol contributes importantly to more liberal (risky) attitudes toward use. The significant indirect effects of personal attitude 1 on personal attitude 2 for Latino/Latina and White students suggests the importance of campus environment, particularly related to alcohol use 2, social identity/self-categorization and status value.

Social identity/self-categorization had significant direct effects on personal attitude 2 for all groups except African American/Black students, suggesting a limited role of this variable in contributing to personal attitude 2 for this group of students and the relevance of identification with friendship groups and the “typical” student for other groups in contributions to personal attitude 2. Again, this finding suggests the relevance of the environmental sources of relatively high influence for all groups in comparison with the African American/Black students.

The status value to personal attitude 2 path was consistently non-significant and negative across groups, meaning that for a given increase in valuing social prestige on campus, there was a small reduction in personal attitude 2. Although the path is negative, it suggests that the riskiest (“okay to get drunk even when it interferes with school and other responsibilities”) attitude is not associated with the greatest desire for social prestige, or put another way, those who most want social prestige may have some diminished acceptance of getting drunk reflected in their attitudes (i.e., “okay to get drunk as long as it doesn’t interfere with school or other responsibilities”). Although no conclusions can be drawn from this finding, it suggests the need for further exploration and understanding of the relationship between the two variables.

Interestingly, neither normative perception 1 nor normative perception 2 significantly contributed direct effects to personal attitude 2 except for White students for whom there was a significant negative direct effect. Significant indirect effects were found only for normative perception 1 and only for White, Multiracial/Biracial and African American/Black students. Normative perception 1 had significant total effects only for African American/Black students. Recall that this normative perception variable

includes both social norms theory indicators of descriptive (actual behavioral) and injunctive (approval) norms as well as theory of planned behavior subjective norms (expectations of important others, in this case friends). In part because of this, it is unclear the contribution of social norms theory to personal attitude 2, but the finding does suggest the possibility that normative perception does not contribute substantially to personal attitudes, thus calling to question the assumptions of social norms theory, one of which suggests that inflated normative perception increases alcohol use through attitudes. The findings in this study would suggest that this may occur only for African American/Black students in a predominantly White institution, and possibly for White and Multiracial/Biracial students indirectly through other variables, though that is also an uncertain speculation.

Trockel et al. (2003) found that subjective norms from theory of planned behavior were a better predictor of subsequent use than social norms theory injunctive (approval) norms, in which case having the subjective norms measures in the variable as they are here would seem to strengthen its validity, and yet significant direct effects are still limited. Normative perception 1 for White students demonstrated some potential for an *increase* in normative perception 1, not *decrease* as social norms theory would say, to contribute to a reduction in personal attitude 2 and thus would hold potential to reduce alcohol use through attitudes.

However, one can also argue that this negative relationship of normative perception 1 to personal attitude 2 for White students might simply be an artifact of measurement. It may be that for White students, their attitudes are already as permissive as their normative perceptions, so there is minimal additional contribution from

normative perception 1 or from normative perception 2. There are studies demonstrating that one's own attitudes tend to be at least somewhat lower than the perceived norm as summarized in the Bosari and Carey meta-analysis (2003), except for among those students with the riskiest attitudes who tend to perceive the norm more accurately (Carter & Kahnweiler, 2000). If this latter scenario were the case with White students in this study, then one would not expect to see this increase in normative perception 1 contribute to a decrease in personal attitude 2, as is found here.

Social identity/self-categorization was not a significant contributor to personal attitude 2 for African American/Black students but provided significant direct and total effects for all other groups as well as significant negative indirect effects for Latino/Latina students. This finding suggests that for African American/Black students, personal attitude may be less associated with the drinking attitudes of their "typical" friend, the "typical" student on campus, or their identity with campus but that for other groups attitudes may be associated with social identity/self-categorization in these ways. Status value offered no significant effects to personal attitude 2 for any group in this racial-ethnic group analysis, despite a low to moderate significant correlation between personal attitude and status value for White and Latino/Latina students. A different pattern is revealed later in the analysis of gender for White students.

Effects on perceived behavioral control. Two variables, personal attitude 1 and normative perception 1, were hypothesized to contribute indirectly to perceived behavioral control, while alcohol use 2, status value, social identity/self-categorization, normative perception 2 and personal attitude 2 were modeled to produce both direct and indirect effects. The model explained little variance in perceived behavioral control,

ranging from a low of 8% for Asian Pacific American and 9% for White American students to 12% for Latino/Latina students, 23% for Multiracial/Biracial students and a high of 28% of the variance for African American/Black students.

Significant effects on perceived behavioral control came consistently from indirect and total effects of personal attitude 1 for all groups except Latino/Latina students whose only significant effects on the variable derived from the total effects of their alcohol use 2. African American/Black students had one additional source of significant effects, derived also from total effects of alcohol use 2. This finding suggests perhaps a diminished sense of choice with increased use of alcohol for Latino/Latina and African American/Black students.

Multiracial/Biracial and White students had more significant sources of effects on perceived behavioral control and were the only groups with significant direct effects on perceived behavioral control. For White students alcohol use 2 provided significant indirect and total effects, status value contributed direct and total significant effects, as did personal attitude 2, suggesting a number of sources of influence on perceived behavioral control for White students. Among Multiracial/Biracial students, social identity/self-categorization contributed negative significant total effects to lack of perceived behavioral control, possibly a protective path, while alcohol use 2 offered significant direct effects, a risk-related path.

Effects on intention. Eight variables were modeled to contribute to intention, two of them only indirectly. The model explained the variable well across all groups, with a low of 82% of the variance of intention explained for Asian Pacific American students, a high of 91% for African American/Black and Latino/Latina students, 86% explained for

White students, and 87% for Multiracial/Biracial students. White students had the most—six—sources of significant contribution to intention, while Latino/Latina students had the fewest, four. African American/Black, Asian Pacific American, and Multiracial/Biracial students had five sources of significant effects on intention. No significantly non-invariant paths were found when they were tested across racial-ethnic groups. This finding suggests the importance of several contributing sources for forming intentions and implies opportunities for influencing them.

Personal attitude 1 provided significant indirect and total effects for all groups analyzed, as did alcohol use 2 which also provided direct effects for Asian Pacific American, Latino/Latina and White students. Personal attitude 2 also provided significant direct and total effects for all groups in this analysis. That personal attitude 2 and alcohol use 2 contributed significantly to intention among all groups is not surprising since both past behavior and attitude are frequently cited in studies of future behavior (Ajzen, 2002b).

African American/Black students had significant indirect and total effects from normative perception 1 but no significant effects from normative perception 2. The only other group with significant effects from normative perception 1 on intention was Latino/Latina students with a significant total effect and no significant effects from normative perception 2. In contrast, the only groups with significant effects from normative perception 2 on intention were Asian Pacific American students and White students, both of which had significant total effects from that variable. These findings suggest a malleability of normative perception 1 over the course of Time One to Time Two for Asian Pacific American and White students and less so for African

American/Black and Latino/Latina students. Multiracial/Biracial students had no significant effects from normative perception 1 or normative perception 2 to intention suggesting that the drinking intention of this group may be protected somewhat from the perceptions of others' drinking, others' attitudes toward drinking, and others' expectations for drinking.

The only group with significant effects from perceived behavioral control to intention was White students with direct and total significant effects. This finding suggests perhaps a perceived pressure to drink among White students, a risk element that may benefit from intervention. Social identity/self-categorization presented mixed results, with no significant effects for Latino/Latina students on drinking intention, indirect and total significant effects for Asian Pacific American, Multiracial and White students; White students also had significant direct effects from social identity/self-categorization on their drinking intention, as did African American/Black students who had significant direct and total effects from that variable but no significant indirect effects. These findings about social identity/self-categorization suggest again a range of experiences among the different racial-ethnic groups in terms of their social identity/self-categorization with "typical" friends and "typical" students. More investigation is needed to understand better potential aspects of risk and protection. It would appear that for African American/Black students, an increase in social identity/self-categorization increases their drinking intention directly, as it does for White students, but that for Asian Pacific American, Latino/Latina, and Multiracial/Biracial students, other variables in the model may mediate this relationship.

The only group with significant effects from status value to intention was Multiracial/Biracial students for whom total effects were significant and also negative, suggesting a possible protective relationship for them between greater status desires and reduced drinking intention. This is an area for additional research to discern contributions from this variable and to understand it better.

Effects on alcohol use 3. Nine variables were modeled to contribute to alcohol use 3, two of them only indirectly, normative perception 1 and personal attitude 1. Together these variables accounted for a substantial proportion of the variance in alcohol use 3 among all groups in the analysis, from a low of 60% for Asian Pacific American students to a high of 92% for African American/Black students. The model accounted for 65% of the variance in alcohol use 3 for Latino/Latina students, 67% for White students, and 84% for Multiracial/Biracial students.

When direct paths to alcohol use 3 were tested individually across racial-ethnic groups, only one was significantly non-invariant (different); the rest were not significantly different across groups. The single path that significantly differed was that between alcohol use 2 and alcohol use 3. For African American/Black students in the study, an increase in alcohol use 2 contributed significantly relatively more to alcohol use 3 than for Asian Pacific American or White students. This finding suggests that for African American/Black students relative to Asian Pacific American and White students, drinking in fall term freshman year may contribute to greater increases in quantity or frequency of alcohol use during the spring. It may be that for African American/Black students, the group whose mean alcohol use 2 was the lowest in the fall, are particularly

vulnerable to increasing their use, as is reflected in the difference between their alcohol use 2 and alcohol use 3 means relative to those of other groups.

Although no other direct paths to alcohol use 3 were significantly non-invariant, there were differences between groups in terms of variables offering significant direct, indirect and total effects on alcohol use 3. All groups had significant total and direct effects of alcohol use 2 on alcohol use 3, but only African American/Black and White students had significant indirect effects of alcohol use 2 on alcohol use 3 through moderating variables. This finding suggests the important role that alcohol use for African American/Black and White students has in its contributions to subsequent variables in the model, potentially heightening risk of alcohol use through them.

Consistent with social norms theory (Perkins & Berkowitz, 1986) and the theory of planned behavior (Ajzen, 1985, 1991), attitudes significantly predicted alcohol use 3. However, there were variables in the model that mediated the effects of personal attitude 1 for Multiracial/Biracial students and White students. Although direct effects of personal attitude 1 were not modeled, for all groups the indirect/total effects of personal attitude 1 on alcohol use 3 modeled were significant. Examination of personal attitude 2, however, shows a different pattern. There were no significant effects of personal attitude 2 on alcohol use 3 for either Asian Pacific American or Latino/Latina American students, perhaps suggesting that the effects were already accounted for through personal attitude 1. For White students personal attitude 2 had significant indirect and total effects on alcohol use 3, for African American/Black students a significant total effect, and for Multiracial/Biracial students, a significant indirect effect countered by a moderate but non-significant negative effect to produce a non-significant total effect. These findings

suggest a greater malleability of attitudes over time for the White students, African American/Black students and Multiracial/Biracial students whose personal attitude 2 had significant effects on alcohol use 3 than for those students for whom it did not, Asian Pacific American and Latino/Latina students. In other words, the pre-college attitudes of Asian Pacific American and Latino American students may have had less contribution from outside sources over the course of the study, and other groups more contribution from outside sources.

The role of normative perceptions included injunctive and descriptive norms from social norms theory (Perkins & Berkowitz, 1986) and subjective norms from the theory of planned behavior (Ajzen, 1985, 1991) and was measured pre-college and in the fall. Normative perception 1 contributed indirect and total significant effects to alcohol use 3 among all groups except Latino/Latina students and Asian Pacific American students for whom neither normative perception 1 nor normative perception 2 contributed significantly to alcohol use 3. Normative perception 2 provided significant indirect effects on alcohol use 3 for White students and significant negative total effects for Multiracial/Biracial students in the study. That normative perception 2 had significant effects for these groups suggests that there were intervening contributors in the model after normative perception 1 whose effects were not yet accounted for in the earlier observation of the variable. The finding for Multiracial/Biracial students suggests that increases in normative perception 2 are met with a reduction in their own alcohol use 3. For White students, the finding suggests that normative perception 2 has a significant role in the subsequent variables for this group of students. Examination of the data demonstrated in particular its significant total effect on drinking intention for this group.

No other variables contributed significantly to alcohol use 3 for African American/Black, Asian Pacific American or Latino/Latina American students. This finding suggests that for these students the effects were already accounted for through normative perception and personal attitude 2 for African American/Black students, and through personal attitude 1 and alcohol use 2 for all three of these groups. Although it is possible that the other variables, if measured and modeled at earlier points for these groups, would provide significant contributions to alcohol use 2, that is unknown through this study. Important to recognize about these groups is that students may have within their first two months of school already established some long term drinking patterns that will continue to have a direct influence on subsequent drinking. For these groups early intervention may be of paramount importance, particularly for African American/Black students whose normative perception 1 did contribute significantly to alcohol use 2 and alcohol use 3. Equally important is research to understand the other variables in the model during the summer before college and early in the fall term to discern other significant contributors that may be open to change through intervention. It is also possible that for these relatively small groups, there was not enough power to detect small effect sizes late in the model, producing a Type I error. However, given that the equally small Multiracial/Biracial group had significant effects later in the model, this seems to be of limited concern. More likely is that the explanation of variance in alcohol use 3 is already accounted for through earlier variables in the model and that the different campus culture environments in which White students versus students of color may associate.

For White students their social identity/self-categorization had a significant indirect and total effect on alcohol use 3, suggesting that their identification with the drinking of their “typical” friend and the “typical” student on campus plays a role in their later drinking. Also for White students drinking intention had significant direct and total effects on subsequent alcohol use 3, as it did also for Multiracial/Biracial students. An increased desire for social prestige on campus contributed, for Multiracial/Biracial students, a significant negative total effect on alcohol use 3, suggesting that these students may drink less if they are interested in greater social prestige. On the other hand, a suppressor variable in the model could produce a significant negative effect such as this one, particularly since the correlation is positive, if non-significant and low, between alcohol use and status value for this group (Maassen & Bakker, 2001). Determining whether such a suppressor effect or perhaps a somewhat protective mechanism is operating for Multiracial/Biracial students would require further research. Perceived behavioral control in this analysis demonstrated no significant effects on alcohol use 3 for any group; this is not the case in the by gender analysis of White students to be discussed next.

Analysis by Gender for White Students

Effects on alcohol use 2. Two variables were modeled to contribute direct/total effects to alcohol use 3. When paths were tested between groups for White men and White women, none of the paths to alcohol use 2 was significantly non-invariant; they were not significantly different. The variables explained 58% of the variance in alcohol use 2 for White men and 45% of the variance in it for White women, suggesting that for women there may be more contributors that are not accounted for in the first state of the

model or that the measures performed differently for them. Normative perception 1 and personal attitude 1 both offered significant direct, and thus total, effects on alcohol use 2 for both groups.

Effects on social identity/self-categorization. Social identity/self-categorization was modeled to have three variables contributing to its explanation, with alcohol use 2 offering only direct/total effects and normative perception 1 and personal attitude 1 offering indirect, direct and total. Together these variables explained nearly a third of social identity/self-categorization for White men (32%) and White women (33%). When tested across the groups, none of the paths was significantly non-invariant; for both White women and White men, they were statistically equal in this analysis.

Normative perception 1 provided significant indirect effects, personal attitude 1 significant indirect and total effects, and alcohol use 2 significant direct and total effects. Together these findings demonstrate that normative perception 1 and personal attitude 1 contributed to social identity/self-categorization only through alcohol use 2, suggesting that the extent to which White men and women identify with the drinking of the “typical” student in their friendship group or the “typical” student on campus is directly related to their previous use of alcohol. It also suggests that, despite attitudes and normative perceptions, interventions to reduce access to this use of alcohol could be instrumental in prevention efforts for this group. Such “environmental prevention” (Clapp, Whitney, & Shillington, 2002, p. 287) (e.g., limiting alcohol retail outlets, placing limits on cost reductions of alcohol, increasing enforcement of the legal drinking age) efforts have been successful (Hingson, 2005; Clapp, Lange, Min, Johnson, Shillington, & Voas, 2003) and should be investigated further (Clapp, Lange, Min et al.).

Effects on status value. Four variables were modeled to contribute to status value, normative perception 1, personal attitude 1, alcohol use 2 and social identity/self-categorization. All but the last were modeled to have both direct and indirect effects. Social identity/self-categorization was modeled to have only direct effects. Together the four variables explained a small amount of the variance in status value, specifically 22% for White men and 23% for White women. When tested across groups, one path to status value was significantly non-invariant. Normative perception 1 contributed significantly more to status value for White women than for White men. This finding suggests an increased vulnerability for this group of women surrounding their pre-college normative perceptions about others' attitudes toward drinking, others' actual drinking and the expectations their friends have for them to drink or get drunk.

For both men and women the direct/total effect of social identity/self-categorization on status value was significant, suggesting that the more these students identify with the drinking of their "typical" friend or "typical" campus students, the more they also desire social prestige on campus, potentially putting them at risk for increased drinking if, as Snyder and Sedlacek (2003) found, a status mechanism is in operation surrounding drinking among first year students on campus. There is evidence in the Time One pre-college University New Student Census data set for this study that such a status mechanism is in place for this cohort as well (Snyder & Sedlacek, 2004).

Alcohol use 2 had significant indirect effects for both men and women, and men additionally had a significant total effect of alcohol use 2 on status value. However, for women the negative direct effect appeared to eliminate the significant total effect of alcohol use 2 on status value. It would appear that for men, the more they drink, the

more they identify with “typical” drinkers and the more they may value social prestige on campus. For women, though, it appears that their actual drinking may not play as strong a role in their social identity/self-categorization or their subsequent status value, perhaps because White men rather than women are generally found to be the higher risk “typical” drinker. In terms of “typical” friends, Campo et al. (2003) found that for women and for men the drinking pattern of their typical male rather than female friend or friends generally predicted their drinking, perhaps a partial explanation of this finding.

Personal attitude 1 had significant indirect effects on status value for both men and women, with a significant total effect also for men in this analysis, suggesting an increased vulnerability for men whose attitudes are more risky toward drinking if they desire greater social prestige on campus and if, as was demonstrated in previous research, the status mechanism surrounding drinking is in operation on campus (Snyder & Sedlacek, 2003).

Effects on normative perception 2. Normative perception 2 was modeled to derive from five variables. Normative perception 1 and personal attitude 1 were modeled to have indirect effects on normative perception 2, while alcohol use 2, status value and social identity/self-categorization were hypothesized to have direct and indirect effects on it. Together these variables explained 47% of the variance in normative perception 2 for White men and 44% for White women. No paths were significantly non-invariant in this analysis.

Neither status value nor social identity/self categorization contributed any significant effects to normative perception 2 for White men or women. Normative perception 1 provided significant direct, indirect and total effects to normative perception

2 for both groups, and alcohol use 2 provided significant direct and total effects as well for both. For neither White men nor White women, did personal attitude 1 contribute significant total effects to normative perception 2. For the men, there were significant negative direct effects countered by significant positive indirect effects, suggesting that despite a more permissive personal attitude 1, the direct effect was a diminished contribution resulting in a reduction of normative perception 2. A similar relationship existed for White women, though their direct effects were not significant. There is a possible explanation for this relationship in the existing literature. Carter and Kahnweiler (2000) have demonstrated that the students whose attitudes are most permissive tend to most accurately represent the norm, in other words, demonstrate less misperception (over inflation) of it than do other students. This may be the case here.

Effects on personal attitude 2. Personal attitude 2 was hypothesized to derive both directly and indirectly from normative perception 1, personal attitude 1, alcohol use 2, status value and social identity/self-categorization. Normative perception 2 was modeled to contribute directly to it. Together these variables explained about three quarters of the variance in personal attitude 2, about 79% for White men and 76% for White women. When tested across groups, two paths contributing to personal attitude 2 were significantly non-invariant. White women had a stronger path from alcohol use 2 to personal attitude 2, suggesting that their use of alcohol contributed to greater increases in the permissiveness of their attitudes at Time Two. For White men, the path from personal attitude 1 to personal attitude 2 was stronger than for women, suggesting perhaps less contribution to personal attitude 2 from other sources.

There were similar sources of significant effects on personal attitude 2 for both men and women in this analysis as well as contrasting significant effects. Despite the significant differences in the strength of the paths from alcohol use 2 and from personal attitude 1, both groups did have significant direct, indirect and total effects on personal attitude 2 from these two variables. This finding suggests the importance of attitude and past behavior in forming subsequent attitudes. Women and men both had significant indirect effects from normative perception 1 on personal attitude 2, but women also had significant direct effects, demonstrating an additional potential vulnerability from normative perception 1. Total effects of normative perception 1 on personal attitude 2 were non-significant for both groups, suggesting a potential weakness in the assumptions of social norms theory which assumes that normative perception influences attitudes and thus behavior. At the least this finding suggests the importance of working to understand the relationship of normative perceptions and personal attitudes and behavior over time given the substantial resources but limited devoted to social norms campaigns and the severity of the alcohol use problem among college students.

White women had more sources of significant effects on personal attitude 2 than White men did, perhaps making their personal attitudes 2 more vulnerable to external influences, suggesting the possibility for intervention to shift those attitudes to a safer level through various contributors. For White women, there was a small but significant direct and total effect from normative perception 2 on their personal attitude 2. Status value produced a significant negative direct and total effect on personal attitude 2 for women. This finding is interesting because it suggests that desiring greater social prestige on campus has the potential to serve as a protection, with White women seeking prestige

possibly having a less permissive personal attitude 2 toward drinking. This finding should be examined with caution, however, as there are contradictory findings just within this study regarding status value for White women. Also, as with the potential protective role of status value for Multiracial/Biracial students, this finding may be an artifact of measurement and should not be used to develop intervention without further study.

Effects on perceived behavioral control. Normative perception 1 and personal attitude 1 were modeled to contribute indirectly to perceived behavioral control, and alcohol use 2, status value, social identity/self-categorization, normative perception 2 and personal attitude 2 both directly and indirectly. Together these variables accounted for only a small amount of variance in perceived behavioral control, 10% for White men and 9% for White women. No significantly non-invariant paths were found when paths were tested consecutively across groups.

White men had only two variables that contributed significantly to perceived behavioral control. Personal attitude 1 provided significant indirect and total effects, and alcohol use 2 provided significant total effects. This finding suggests that White men's perceived ability to choose how much and when they drink and whether or not they get drunk is related largely to their own attitudes and prior behavior rather than to sources outside themselves such as friendship groups or normative perceptions. White women had more sources of contribution to their perceived behavioral control. Not only did they have the indirect and total significant effects from personal attitude 1 and the total significant effects from alcohol use 2 that White men had, but White women had significant indirect effects from alcohol use 2, significant direct and total effects from status value and from personal attitude 2, and significant indirect effects from social

identity/self-categorization. Their perceived behavioral control regarding their drinking choices appears to be more malleable, and thus potentially more vulnerable as well, from social identity/self-categorization as an external source, and potentially more open to intervention from several sources. This finding for women is consistent with the experiences of women reflected in work by Gilligan (1981) and by Belenky, Clinchy, Goldberger, and Tarule (1986). Women's experiences, they found, tended to be informed by a network of sources.

Effects on intention. Drinking intention for White men and White women had multiple sources of significant effects, direct, indirect and total. All variables preceding intention were modeled to contribute indirectly to its variance, and all but normative perception 1 and personal attitude 2 were also modeled to contribute directly. Together the variables explained a substantial amount of the variance of intention for both White men for whom they explained 87% and for White women, for whom they explained 86% of the variance, suggesting the measures in the study operate similarly for both genders. When paths were consecutively tested across groups, no significantly non-invariant paths were found.

Interestingly, normative perception 1 produced no significant effects on intention for either group. The same can be said of perceived behavioral control. Three variables were similar in their pattern of significant effects on intention for both White men and White women. Personal attitude 1 contributed significant indirect and total effects, while personal attitude 2 contributed significant direct and total effects for both groups. Alcohol use 2 contributed indirect, direct and total significant effects. One would expect that attitudes and past behavior might contribute most strongly to intention, widely

accepted as a good way to examine likely future behavior when that measure is unavailable (Ajzen, 2002b).

The only additional source of significant effects for White men was social identity/self-categorization that contributed indirect and total significant effects, suggesting that for White men their identification with the drinking of “typical” friends and fellow students is important in relation to drinking intention. Social identity/self-categorization offered significant direct, indirect and total effects on drinking intention for White women, with some similar implications regarding the relationship of identity groups and intention. However, for women, there were two other key sources of significant effects. Status value had a significant negative indirect effect on drinking intention, while normative perception 2 had significant indirect and total effects on it. This finding implies that for women desiring more social prestige on campus and who are already drinking at the highest risk levels or whose attitudes may permit that level of drinking, their drinking intention may be somewhat reduced. On the other hand, for women who want that social prestige but have not started drinking or are low risk drinkers, their desire for social prestige may be a risk element to their increased alcohol use. These are possible protective and risk relationship to examine. The role of status value for this group in particular must be examined cautiously, as its role in alcohol use 3 will demonstrate. Consistent with social norms theory and the theory of planned behavior, on the other hand, for White women increased normative perception of others’ drinking, others drinking attitudes and their friends expectations was a source of increased, riskier, drinking intentions, particularly important given the direct and total effect intention had for them on alcohol use 3 to be presented next.

Effects on alcohol use 3. Nine variables in the model were hypothesized to contribute to alcohol use 3, two of them, normative perception 1 and personal attitude 1, only indirectly. The model explained 76% of alcohol use 3 for White men and 63% for White women. For both White men and White women, seven of the nine variables did produce significant effects, with some variables similar and others different. When the paths in the model were tested consecutively across the two groups, two paths to alcohol use 3 were found to be significantly non-invariant. Women had a stronger relationship from status value to alcohol use 3, while men had a stronger relationship from perceived behavioral control to alcohol use 3. These findings imply a status-related pressure White women may experience and a control-related pressure White men may perceive in their alcohol use experience and call for further research to understand the findings better.

Normative perception 1 had significant and total effects on alcohol use 3 for men but not for women in this analysis, yet for women normative perception 2 had significant indirect effects but there were not significant effects for men. Both personal attitude 1 and personal attitude 2 had significant indirect and total effects on alcohol use 3 for White men and White women. Attitudes are known to be difficult to change, but because their significant contribution is indirect, for White women in the study the possibility may exist to alter their possible contribution to behavior through intervention aimed directly at the moderating variables and indirectly at attitude change. Alcohol use 2 was similar for both men and women in this analysis, offering significant direct, indirect and total effects on alcohol use 3 for both groups, as one might expect (Ajzen, 2002b). This finding suggests that increases in alcohol use from Time Two to Time Three may be targeted for intervention both directly in terms of alcohol use 2 and indirectly through intervening

variables. It also implies multiple sources of influence on later use subsequent to initial use, sources that appear for the most part to be related to increases in subsequent use.

Social identity/self-categorization is significant for both men and women but in different ways. For men, the direct and total effects on alcohol use 3 are significant, whereas for women, the indirect and total effects are significant, suggesting the friendship environment and identification with campus culture are experienced differently by White men and White women. Perceived behavioral control was the only other variable that produced significant effects on alcohol use 3 for White men, contributing significant direct and total effects. Its significance suggests a pressure White men may feel for a lack of choice and control over their drinking that contributes directly to their alcohol use spring term first year and may be a key point of intervention development. For White women, there were two additional sources of significant effects on alcohol use 3, but perceived behavioral control was not one of them. For the women, intention had a direct/total significant effect on alcohol use 3, suggesting a need to focus on drinking intention intervention for this group. Additionally, status value had a significant direct effect on alcohol use 3, but offered a negative significant indirect effect on it as well, making the total effects non-significant. This finding brings to the forefront the need to understand the role of status value in its relationship to drinking and to other variables, both those in the model and those not examined in the model, particularly for White women. It would seem that one's desire for social prestige on campus holds the potential to be both a risk element and a protective element for White women, as noted previously regarding the effects of status value on intention for White women.

Summary of Effects of Variables in the Model Across Both Multigroup Analyses

Of the variables in the model two most consistently had significant effects on subsequent variables and for the most groups, personal attitude 1 and alcohol use 2. Normative perception 1 had significant effects for all groups on at least one subsequent variable, as did personal attitude 2 and social identity/self-categorization, whereas normative perception 2 had no significant effects for African American/Black or Latino/Latina students. Similarly, status value had significant effects on a subsequent variable only for White students, specifically White women when the two gender groups were analyzed separately, and for Multiracial/Biracial students. Perceived behavioral control had significant effects on subsequent variables only for White students, specifically for White men when the gender groups were analyzed separately. The last variable, intention, was hypothesized to contribute directly to alcohol use 3. It had significant effects only for Multiracial/Biracial students and for White students, specifically for White women when the two gender groups were analyzed separately.

Effects of normative perception 1 on subsequent variables in the model. Except for Asian Pacific American students, normative perception 1 had significant direct, indirect, and total effects among all groups in both analyses. For Asian Pacific American students the only significant effects of normative perception 1 were the direct and total effects it had on normative perception 2. White students (men and women) and Multiracial/Biracial students had significant direct, indirect and total effects from normative perception 1 on normative perception 2. Latino/Latina students had only total significant effects and African American/Black students had significant indirect and total effects from normative perception 1 on its subsequent version. For White (men and

women) students and Multiracial/Biracial students, normative perception 1 produced significant indirect effects on social identity/self-categorization. No significant effects were found in this relationship for African American/Black, Asian Pacific American or Latino/Latina American students.

Normative perception 1 contributed significant indirect effects to personal attitude 2 for all groups except Latino/Latina and Asian Pacific American students. These students may be somewhat protected from their normative perception by other elements not reflected in the model, including their generation status. A sizeable number of these student had a parent who was foreign born or were foreign born themselves; it may be that the family cultures insulated these students some from the larger social influences toward drinking. Normative perception 1 produced significant total effects for African American/Black students only, and offered negative significant direct effects for White students, for White women specifically, perhaps because the attitudes of White students are already closer to the higher perception than those of African American/Black students. Two groups, African American/Black students and Latino/Latina students had significant total effects on intention from normative perception 1, with significant indirect effects as well for African American/Black students. Total effects and indirect effects on alcohol use 3 were significant for White (men), African American/Black, Multiracial/Biracial students, but not for Asian Pacific American, Latino/Latina American and White women students. For White students, and specifically for White women when the genders were analyzed separately, normative perception 1 had direct and total significant effects on status value, but it did not have significant effects on status value for other groups. No significant effects were found for any group from normative

perception 1 to perceived behavioral control suggesting that what one thinks others do or approve of or expect does not contribute to lack of control over drinking choice.

Findings suggest the overall importance of normative perception 1 in the model for all groups, with significant effects on alcohol use 2 or alcohol use 3 for all but Asian Pacific American students for whom the only significant effects were only normative perception 2. However, even for this group, normative perception 1 played an important role. Normative perception 2 produced significant total effects on drinking intention for Asian Pacific American students. Consistent with social norms theory and the theory of planned behavior, normative perception played a significant role in alcohol use. What is unclear is its relationship to personal attitude and the role of the elements of normative perception (descriptive, injunctive and subjective norms) upon which it is built. More research is required for better understanding here.

Effects of personal attitude 1 on subsequent variables in the model. For all groups in the model personal attitude 1 had significant direct and total effects on alcohol use 2, and significant indirect and total effects on perceived behavioral control, on intention and alcohol use 3, as modeled. Most groups had significant direct, indirect and total effects of personal attitude 1 on personal attitude 2. African American/Black students were the exception in that they had only direct and total significant effects but not indirect significant effects, suggesting perhaps that their attitudes were had fewer contributing variables from Time One to Time Two.

Personal attitude 1 had mixed negative and positive effects on normative perception 2 among the different groups. The direct effects were negative and significant for African American/Black, White (men specifically) and

Multiracial/Biracial students in the study. African American/Black students and White men students also had significant positive indirect effects, resulting for all of them in non-significant total effects of personal attitude 1 on normative perception 2. Asian Pacific American students' personal attitude 1 contributed indirect and total significant effects to normative perception 2. Effects for White women were indirect and significant. Finally, for Latino/Latina students direct and total effects were significant. In fact the path, when tested across groups, was significantly non-invariant; this group had significantly stronger direct effects of personal attitude 1 to normative perception 2 than other racial-ethnic groups in the analysis. This difference for Latino/Latina students is unclear but appears to be negative because of the indirect influences through alcohol use and social identity/self-categorization suggesting a possible protective element for SISC; this may be because family related items were in this variable and a number of these students are first-generation American and may not be acculturated (Abraído-Lanza et al., 2005) to the college alcohol use culture in the U.S.

Personal attitude 1 had significant effects on social identity/self-categorization for all groups except African American/Black and Multiracial/Biracial students. Latino/Latina students and White students (both men and women) had significant indirect and total effects from personal attitude 1. White students as a total group and Asian Pacific American students were the only groups with significant direct effects, producing significant total effects for both groups as well.

All groups except for Asian Pacific American students had significant effects from personal attitude 1 to status value. African American/Black students had a significant direct and total effect, the only group with a significant direct effect from

personal attitude 1 to status value. Latino/Latina students had a significant total effect, as did White men who also had a significant indirect effect from personal attitude 1 to status value. White women had a significant indirect effect from personal attitude 1 to status value, the same effect represented for the entire group of White students and for Multiracial/Biracial students.

Personal attitude 1 had a clear role among all groups in contributing to alcohol use 2, perceived behavioral control, intention and alcohol use 3. More mixed was its contribution to normative perception 2, social identity/self-categorization, and status value. In summary, personal attitude 1 was a substantial contributor for all groups on some variables and for some groups on more variables. This finding is consistent with social norms theory and the theory of planned behavior, though more research is needed to understand its relationship to the variables in the model. Interventions directed at those related variables hold potential to assist in shifting attitudes to be less risky.

Effects of alcohol use 2 on subsequent variables in the model. Alcohol use 2 had a direct and total significant effect on alcohol use 3 among all groups in both analyses. For African American/Black students and White students (men and women) there was also a significant indirect effect, suggesting that alcohol use 2 had important contributions to other variables in the model to account for alcohol use 3.

Similarly, alcohol use 2 had significant indirect and total effects on intention for all groups in the two analyses, and additionally had significant direct effects for Asian Pacific American, Latino/Latina, and White (men and women) students but not for African American/Black or Multiracial/Biracial students.

All groups had direct and total significant effects from alcohol use 2 on normative perception 2 except for Latino/Latina students who had only a significant direct effect. It contributed significant direct and total effects to personal attitude 2 for all groups, and also provided significant indirect effects for Latino/Latina and White (men and women) students.

Social identity/self-categorization had significant direct and total effects from alcohol use 2 for all groups except Asian Pacific American students for whom there were no significant effects on this variable. Alcohol use 2 also contributed significant effects to status value for several groups. The significant effects of alcohol use 2 for Latino/Latina students and for White women were indirect. Alcohol use 2 had indirect and total significant effects for White (men) on status value, while for Multiracial/Biracial students there were significant total effects on status value from alcohol use 2. Asian Pacific American and African American/Black students had no significant effects from alcohol use 2 to status value in this study. Finally, alcohol use 2 produced significant effects on perceived behavioral control for all groups except Asian Pacific American students. There was a significant total effect for African American/Black students, Latino/Latina students, and for White men. There were significant indirect and total effects for White (women) students and for Multiracial/Biracial students a significant direct effect, on perceived behavioral control. Together these findings imply that more use contributes to elements of risk for more use. In other words, the cycle of drinking risks spiral upward generally for students and that more use creates more risk suggesting the importance of early intervention and prevention.

Effects of social identity/self-categorization on subsequent variables in the model.

All groups experienced significant effects of social identity/self-categorization on at least two of six subsequent variables. Consistent across all groups in both analyses were the direct and total effects of this variable on status value, suggesting an important common relationship of social identity/self-categorization and desire for more social prestige and the need for additional research. All groups except Latino/Latina students had significant effects from social identity/self-categorization on intention. This finding suggests that for Latino/Latina students their drinking intention is somewhat protected from contributions of high risk social identity/self-categorization, potentially related to less acculturation as for Latinos/Latinas in other studies (e.g., Abraído-Lanza et al., 2005), yet unknown from this study.

White students, White women in particular when analyzed separately, had significant direct, indirect and total effects, whereas significant effects for White men were indirect and total, as they were for Multiracial/Biracial and Asian Pacific American students. African American/Black students had significant direct and total effects of social identity/self-categorization on their drinking intention. All groups except African American/Black students had significant direct and total effects from this variable on personal attitude 2. Latino/Latina students and White women additionally had significant negative indirect effects of social identity/self-categorization on personal attitude 2.

Only Latino/Latina students in the study had significant effects from social identity/self-categorization onto normative perception 2. This group had negative direct and negative total significant effects, suggesting that for these students, the stronger their social identity/self-categorization, the lower their normative perception 2. This finding is

highly inconclusive, however, particularly for this group. This is in part because the identity variable also included family and high school related questions; if those are the items driving the score higher it could be, as Weidman (1989) has suggested, that the role of family and friends outside the institution continue to play an important role for some non-dominant student groups, particularly those who may not be as acculturated. If this is the case here, the finding would suggest the importance of a focus on family as a potential protective element to target for prevention support. Forty-nine percent of the Latino/Latina students in this study either had one parent who was not born in the U.S. (29%) or were foreign born themselves (20%), so the explanation appears plausible.

Effects of status value on subsequent variables in the model. Most groups had no significant effects from status value to subsequent variables in the model. However, for Multiracial/Biracial students, there was a significant negative total effect of status value on both intention and on alcohol use 3. For White students, women specifically, status value had a significant direct and total effect on perceived behavioral control, a significant positive direct effect on alcohol use 3 countered by a significant negative indirect effect to eliminate significant total effects, and negative significant direct and total effects on personal attitude 2, along with negative significant indirect effects on drinking intention. This variable was made of a single item in the survey and for this group still offered significant effects on later variables in the model above and beyond alcohol use, personal attitude 1 and normative perception 1. Although its role is uncertain for these two groups, it appears an important avenue for further investigation. Perhaps a relationship of drinking and status is centered on a desire for students to fit into the

dominant White male culture in which drinking, particularly high risk drinking, is frequently substantial.

Effects of normative perception 2 on subsequent variables in the model.

Normative perception 2 was modeled to contribute to personal attitude 2, perceived behavioral control, intention and alcohol use 3 for all groups in both analyses. For African American/Black students and Latino/Latina students, it had no significant effects on any of the four variables. For Asian Pacific American students there was a significant total effect on drinking intention, as there was also for White students (White women in particular when analyzed separately) suggesting that for Asian Pacific American students and for White women the perception of what others drink, think and expect in terms of drinking may play an important role in drinking intention, over and above normative perception 1. This may mean that environmental exposure contributes to a shift in normative perception for this group from pre-college to late fall, and that the contributing variables to normative perception 2 are important.

For Multiracial/Biracial students there was a negative significant total effect from normative perception 2 on alcohol use 3. Although difficult to distinguish the reasons for this, for this group of students there simply was not an additional contribution to alcohol use 3 from normative perception beyond that captured in normative perception 1. Perhaps as the expectations, behaviors, and attitudes of others grow riskier, Multiracial/Biracial students are somewhat protected. Their reported alcohol use remained steady from fall to spring ($M = 2.10$), the only group for whom this duplicate report occurred, suggesting a possible protection from some outside sources such as normative perception 2, perhaps

related to being a sample that comprised of a sizeable number of first generation Americans.

In contrast to Multiracial/Biracial students, for White men and women students there was a positive indirect effect on alcohol use 3 from normative perception 2. When analysis by gender was conducted using data from White students, White women had indirect and total significant effects from normative perception 2 on alcohol use 3, whereas White men had significant direct and total effects. This finding suggests that the role of the perception of peers is directly relevant for White men and indirectly through personal attitude 2 and intention for White women. Men may thus be more vulnerable to their immediate impressions of others' behavior, attitudes and expectations, while women may have additional risk or protective elements that assist in determining the final role of normative perception 2 on alcohol use 3. This finding is particularly concerning for several reasons. White men, particularly those who are first-year students, generally have been found to have the highest risk drinking rates and those contributing to the most alcohol-related outcomes (White, & Jackson, 2004/2005). Further, White men whose normative perceptions are so high often do not have a healthy group norm with which to identify in their social circles, suggesting the challenges to intervention through social norms campaigns to reduce the normative perception through social norms theory (e.g., Carter & Kahnweiler, 2000). It may be that for this population a focus on social groups and expectations of friends (subjective norms) may prove more valuable (Trochel et al., 2003).

White women also had significant direct, indirect and total effects from normative perception 2 on their drinking intention. A final source of significant effects of

normative perception 2 for White women was on personal attitude 2; there were significant direct and total effects and a negative significant indirect effect from normative perception 2 to personal attitude 2 for White women. It may be that by this point in the semester personal attitude 2 for White women was nearly as risky as their normative perception 2 and thus did not reflect more significant positive contribution. A look at the mean for normative perception 2 for White women ($M = 7.31$) and for personal attitude 2 ($M = 7.23$) suggests this may be the case.

Effects of personal attitude 2 on subsequent variables in the model. Personal attitude 2 provided significant direct/total effects on intention for all groups in both analyses. This finding is consistent with the theory of planned behavior that posits attitudes influence behavior through intention (Ajzen, 1985, 1991). It suggests the importance of attitudes across groups and highlights the intense attention given the study of attitudes by social psychologists (Eagly & Chaiken, 1993; Terry & Hogg, 2000). For White students, and White women from particular in the second analysis, personal attitude 2 had a significant direct and total effect on perceived behavioral control, suggesting that riskier attitudes contribute importantly to feelings of control or choice for these students, thus holding potential to contribute to risk or protection from risk for alcohol misuse. Indirect effects and total effects were significant from personal attitude 2 to alcohol use 3 for White (men and women), total effects for African American/Black students and indirect effects for Multiracial/Biracial students. Together these findings suggest the importance of personal attitude, both their own immediate ideas about drinking and the contributions of those ideas to the sense of choice about drinking and intention for African American/Black students. On the other hand, the lack of total and

direct effects of personal attitude on alcohol use 3 for Multiracial/Biracial students suggests a potential risk or protection introduced through additional contributions to intention and perceived behavioral control. Perhaps for this group of students their own attitudes have had to be weighed in context, thus indirectly influencing behavior; given the potential for having to balance more than one cultural background, especially for the 46% of these students who were either themselves foreign born (14%) or had one foreign born parent (32%).

Effects of perceived behavioral control on subsequent variables in the model.

Perceived behavioral control was modeled to have direct effects on alcohol use 3 and indirect effects through intention. It produced significant effects only for White students where direct and total effects on intention were significant. For White men, direct and total effects were significant on alcohol use 3. That perceived behavioral control was significant only for White students above and beyond previous elements in the model suggests the potential pressure they may experience to conform to the dominant White drinking culture associated with a predominantly White campus, that this may be an additional risk element for them, especially for White men. The lack of significant effects in the model from perceived behavioral control for the other groups of students suggests that any pressure they experienced is accounted for in other model variables, some of which may produce protective contributions and others risk. The findings suggest for White men an important role of perceived behavioral control and a sense of pressure they may feel to drink. Studies focused on this population could inform the research on this element.

Effects of intention on alcohol use 3. Only two groups in the analyses demonstrated significant effects from intention to alcohol use 3. Direct/total effects were significant for White students, White women specifically when analyzed separately, and for Multiracial/Biracial students. According to Ajzen (2002b), when intentions are not well formed, the significant contribution of past behavior to subsequent behavior emerges and likewise, when intentions and beliefs are well formed, this significant contribution should diminish. For all groups in the study fall alcohol use 2 contributed significantly to spring alcohol use 3, including for White students, both men and women. Interesting in light of Ajzen's proposition, for African American/Black students and Asian Pacific American students, the lowest risk drinkers in the study, the contributions of alcohol use 2 to alcohol use 3 were their one or two strongest paths. For Multiracial/Biracial students this path was their strongest but intention was a substantial one as well, suggesting dual importance. On the other hand, for Latino/Latina students the strength of alcohol use 2 on alcohol use 3 diminished to third strongest path for this group and intention was not significant, suggesting intention may not have been well formed for this group. For White men the case was similar. For White women, intention was a low significant contributor to alcohol use 3 and alcohol use 2 was a stronger direct contributor. Together these findings suggest that intention may not be well formed, even for White women, and may be open to influence from intervention as well as influence from high-risk sources.

Research Question Three:

*Within racial-ethnic groups and by gender for White men and White women
can the model demonstrate the sources of greatest risk or protection,
and thus ways to focus intervention?*

Based on the present research there are several possible sources of risk or protection to be considered for the various groups in the study. However, one should use caution while interpreting these findings given the small sample sizes and the substantial attrition over the course of the three data collection points. This is particularly true in the case of African American/Black students since the sample was predominantly comprised of women and under represented the men in the initial sample. Examination of them is instructional and may inform future research.

African American/Black

The model explained 92% of the variance in spring alcohol use for African American/Black students in the study. For African American/Black students in the study, a number of potential sources of risk or protection emerged. In particular for this group, pre-college personal attitude to fall personal attitude was a key source of influence, as the path was significantly non-invariant across groups. This strength represents a potential risk of increased alcohol use, or possibly a source of protection against increased use to be tapped through a soundly developed intervention. The strength of this relationship in attitudes over time may offer the opportunity to reinforce any lower risk attitudes that this group of students already holds. Similarly, since pre-college normative perception had a significant total effect on spring alcohol use for this group, correcting any misperceptions that exist for these students prior to their

matriculation could also be a source of protection. Fall alcohol use made a stronger contribution to spring alcohol use for this group than for some other groups. Policies and interventions to prevent fall alcohol use may be especially important in keeping the alcohol use of these students at their relatively safer drinking levels. Understanding the social identity of African American/Black students more clearly offers the potential to influence their drinking intentions indirectly and their fall personal attitudes. Social identity may have protective and risk related elements to it for this group that are not yet understood. It may also be a source of potential disenfranchisement or disengagement with the institution unless students find ways to connect on campus that are compatible with their needs. Since the measures for social identity/self-categorization can explain only about a quarter of the variable's variance, finding measures to explain it better for this group is important to prevention efforts. Their social identity had a direct effect on their social prestige on campus, as it did for all groups in the study, another potential contributor to increased drinking. Overall, personal attitudes at both points in time, pre-college normative perception, and fall alcohol use all hold potential for increased risk for African American/Black students, whereas social identity holds a potential for risk and protection.

Asian Pacific American

The model explained 60% of the variance in alcohol use for Asian Pacific American students. For Asian Pacific American students in the study, pre-college personal attitude had a significant effect on social identity subsequently. Understanding personal attitudes for these students and whether they may need to be either challenged or reinforced as lower risk is important and could provide an opportunity for relevant

intervention since they were important contributors to subsequent drinking. There is the possibility that for these desire for social prestige, personal attitude, and also on drinking intention. Pre-college normative perception to fall normative perception suggested that the variable is malleable over time, offering both a risk potential and an opportunity for intervention such as a targeted social norms campaign. Overall, personal attitude and fall alcohol use provided significant effects on spring alcohol use, with significant effects on other variables deriving from fall normative perception and personal attitude, and social identity, all elements for focus among Asian Pacific American students.

Latino/Latina American

The model explained 65% of the variance in spring alcohol use among Latino/Latina students. Examination of the findings suggested several sources of potential risk or protection for this group. Fall normative perception appears to be open to a number of contributing variables, suggesting it would be a possible source of risk for Latino/Latina students but also a potential focus of intervention to correct misperceptions, targeted correction focused on the perceptions this group holds, not focused on a generic norms correcting campaign. Social identity presented mixed results, some positive and some negative significant effects, suggesting it as a possible source of protection or risk. More research is needed to understand this variable and its related measures better for this population, but it is possible that some of the measures related to family and home friends are protective sources for these students. An early focus on personal attitudes toward drinking held by this population and a reinforcement of low risk attitudes or intervention to reduce the higher risk ones may be of value. Generally, for Latino/Latina students personal attitude and fall alcohol use had significant effects on spring alcohol

use, with pre-college normative perception and fall normative perception offering significant effects to other variables in the model for this group and social identity providing mixed positive and negative significant effects on other elements in the model among these students.

White American

The model explained 66% of the variance in spring alcohol use for White students. When tested across groups, there were five paths that were significantly non-invariant for White men versus White women, and they are addressed in the next two sections.

Both pre-college personal attitude and fall personal attitude had significant effects on spring alcohol use, suggesting that intervention during orientation to either challenge high-risk values or maintain lower risk ones as well as a booster intervention subsequently in fall term could be valuable. Social identity for this group was an element with substantial contribution to increased risk and one that needs to be understood better for this population. It suggested in part that pre-college normative perception may pose a risk for this group and could be the focus of intervention prior to matriculation. The significant relationship of pre-college normative perception to desire for social prestige suggests a potential high-risk relationship, particularly for White women. In fact, for this group, desire for social prestige had numerous significant sources of contribution, suggesting the importance of understanding this element more clearly and its relationship to alcohol use and related variables. Social identity, pre-college normative perception and personal attitude, and fall alcohol use were all significantly related to the desire for social prestige, though the status value variable had mixed effects for this group on

subsequent alcohol use. Fall alcohol use was a significant contributor to alcohol use in the spring term, suggesting the importance of limiting access and use for this group in the fall, even more so since the significant effects of pre-college personal attitude and normative perception on social identity were indirect through fall alcohol use. The relationship of drinking intention and spring alcohol use also suggests a risk path that could be the focus of intervention for this group. The relationship of normative perception and personal attitude is not well understood, and for this group in particular it was puzzling because of the significant negative effects from pre-college personal attitude to fall normative perception. This is an area that needs more research, particularly in terms of how the variables relate for students with higher risk attitudes, alcohol use and normative perceptions. The role of social identity and its significant effects on intention is worthy of recognizing as a potential area of risk for White students, perhaps related to a sense of pressure to drink, as noted in the next two sections. It may be that intervention to focus on changing drinking intention and its contributors may serve this group well. Overall, significant direct or indirect effects on spring alcohol use and related variables derived from all variables in the model for White students, with some elements distinguishing their contributions or lack of contribution more clearly when analyzed by gender for White students. This final sample of White students is somewhat over represented by women compared with the initial sample, so caution should be used in interpreting the findings for the combined group of White men and White women.

White men. For White men the model explained 76% of variance in spring alcohol use. Increases in alcohol use led to riskier social identity and increased desire for social prestige on campus, all risk related elements for White men. This would

suggest that limiting access and use is particularly important fall term for this group. Personal attitude and fall alcohol use or White men also contributed significantly to their perceived pressure to drink, which in turn, had a significant direct effect on spring alcohol use. Together these elements appear to represent a lack of sense of control or choice for White men and should be examined more carefully. It may be that for these students their perceived lack of control results from policy and law that limit their drinking. However, given the pervasive problem of high risk drinking among this group of students, it is more likely that the perception results from campus environmental and peer context and results in a perceived pressure to drink. Both aspects should be investigated. For White men, overall, significant effects on spring alcohol use derived from pre-college and fall personal attitude, pre-college normative perception, fall alcohol use, social identity/self-categorization, and perceived behavioral control. Significant indirect effects on spring alcohol use also derived from fall normative perception. In particular, the path from pre-college personal attitude to fall personal attitude was stronger for men than for women, as was the path from perceived behavioral control to spring alcohol use, both aspects of particular risk for White men.

White women. The model explained 63% of the variance in spring alcohol use for White women. There were a number of elements that might increase the risk of alcohol use among White women and some that might serve as potential protective elements. Pre-college normative perception directly influenced desires for social prestige on campus for White women, suggesting that their views of others' behaviors, attitudes, and expectations serve as a risk element and may be important to address through pre-college intervention. Personal attitude for women had several sources of significant effects,

suggesting their vulnerability to surrounding contexts but also the potential malleability of their attitudes, potential openness to influence through intervention. Desire for social prestige had numerous sources of significant effects for White women and the status variable had a significant effect on fall personal attitude. Greater understanding of status value is needed but the findings do suggest a potential risk element. Multiple sources of contribution to the sense of pressure to drink included pre-college and fall attitude, desire for social prestige, social identity, and fall alcohol use. Although the sense of pressure to drink did not have a significant effect on intention or spring alcohol use for this group, it is possible that through intervention it could be developed as a protective element. That desire for social prestige, fall normative perception, and social identity had significant effects on drinking intention for White women suggests the need for intervention to address these risk elements, including perhaps a booster to correct any normative misperceptions for these students sometime fall term. The desire for social prestige had a significant direct positive effect on spring alcohol use, suggesting an element of risk, as well as a significant negative indirect effect, suggesting potential for protective intervention. Their significant direct effect of intention on spring alcohol use presents a risk element that could also provide an avenue for intervention.

Overall, for White women, pre-college personal attitude, fall alcohol use, fall normative perception, social identity/self-categorization, and intention all provided significant effects on spring alcohol use. Additionally, fall personal attitude and pre-college normative perception had indirect significant effects, and status value had significant negative and positive effects. In addition, three paths were significantly non-invariant for White women when compared to White men and presented potential

increased aspects of risk for them. Women had a stronger path from pre-college normative perception to status value, from fall alcohol use to fall personal attitude and from status value to spring alcohol use, making these areas particularly important in the focus of understanding and intervention for White women.

Multiracial/Biracial American

For Multiracial/Biracial American students the model explained 84% of their spring alcohol use, suggesting, as with African American/Black students for whom the model explained 92% of alcohol use, that much of the contribution to the drinking of the group is related to campus environment. For this group of students pre-college normative perception to fall alcohol use was a significant path; it was significantly non-invariant when tested across groups and was found stronger for Multiracial/Biracial students, suggesting an increased risk for this group. The opportunity to intervene prior to matriculation to correct any existing misperceptions, as with White students, but geared toward the specific misperceptions this group may have might be important to consider. The role of pre-college normative perception had both positive and negative significant effects for this group on social identity, suggesting the importance of understanding the relationships of these two elements and their underlying measures.

Social identity appears to be an element that could pose risk or provide protection. For example, it had a negative significant effect on the sense of pressure to drink among these students, contributing a greater sense of control for them, while at the same time contributing positive significant effects to intention, desire for social prestige, and fall attitudes. It is possible that for this group of students, who their friends are (the ones with expectations and with whom they identify and socialize) plays a particularly important

role in the development of normative perceptions and social identity, suggesting potential for risk or protection as these students choose social groups with whom to identify. The racial composition of the campus environment may be important in drinking outcomes for high-risk groups (Wechsler & Kuo, 2003), and one may extrapolate from that the potential impact of the racial-ethnic composition of one's friendship group on one's own drinking patterns. In other words, who one associates with can be either protective or risky in terms of encouraging safe or harmful choices around alcohol.

Desire for social prestige on campus is another element that appears to have potential to be either a risk or protective one. It has a negative total effect on intention, suggesting that increased desire for status diminishes one's drinking intention for this group. However, increased fall alcohol use contributes positively and significantly through social identity to increased desire for status on campus. It would appear for this group, as with White students (women in particular), that an intervention focused on reducing drinking intention could be valuable given its direct and total significant effect on spring alcohol use. Overall, for Multiracial/Biracial students, there were significant effects on spring alcohol use from multiple sources, including a potentially protective effect from status value, and risk related effects from intention, pre-college personal attitude and normative perception, fall normative perception, and fall alcohol use. Significant effects on other variables in the model also derived from fall personal attitude and from social identity that appeared to have potential as a risk and protective element.

Research Question Four:

Can the model demonstrate common paths of risk or protective contribution across all racial-ethnic groups and for White men and White women?

There were seven invariant (i.e., not differing significantly) paths contributing significantly in the model across all five racial-ethnic groups in the study, five significant for all groups and an additional two paths significant for four groups. Each of these paths suggested contributions to increased alcohol use across all groups. Higher scores on pre-college personal attitude led to greater fall alcohol use. The stronger one's social identity, the greater one's desire for social status (i.e., social prestige on campus). Greater fall alcohol use contributed to increases in one's fall personal attitude. More liberal fall attitudes contributed to increased quantity and frequency drinking intention. Another invariant path, but one which was significant only for four groups rather than five (not African American/Black), was the contribution of social identity to fall personal attitude. A stronger social identity/self-categorization contributed to a more liberal fall attitude except among African American/Black students. Another path was invariant across all five groups: Higher fall alcohol use contributed to stronger social identity/self-categorization among all groups, significantly for all but the Asian Pacific American students. Pre-college normative perception contributed significantly to fall normative perception with at least direct, indirect, or total effects for all groups.

This cluster of invariant paths, five of which are significant across all groups, suggests several things. The contribution of pre-college attitude to fall alcohol use and, in turn, the contribution of that use to riskier subsequent attitudes and in turn to riskier drinking intention suggests for all groups a cycle of risk. It highlights the importance of

attitudes developed prior to college and pre-college intervention across all groups. The invariant contribution of fall alcohol use to social identity, a path significant for all groups but Asian Pacific American students, points to the role of alcohol in the campus culture and in the identification with the campus. For all groups this increased identification/self-categorization contributed significantly to a desire for social prestige or status on campus. Again, together the relationships of pre-college attitude contributing significantly to alcohol use and (for most) to social identity and for all to desire for social prestige on campus, and in turn from identity to fall attitudes toward drinking (significant for all groups except African American/Black), and then to drinking intention suggests the ingrained cultural elements of increases attitudes, campus identity, status, and alcohol use, a highly risky combination. Findings suggest that for African American/Black students identifying more closely with the dominant White population that generally drinks more, their attitudes and other elements in the model may offer some risk protection since this identity does not contribute significantly to those elements. Similarly, it may be for Asian Pacific American students who do choose to drink, that the contribution of that experience to social identity may not be significantly riskier than their alcohol use, may already be accounted for in that use variable.

The role of pre-college normative perception contributed significantly to fall normative perception for all groups, and the path was invariant across groups. The implication here perhaps is that the risky perceptions continue to become more risky. It is possible that with more time, normative perception becomes directly significant beyond pre-college normative perception for more groups, so understanding this element and its theoretical aspects becomes important.

White Men and White Women

In the examination of White men and White women, there were numerous common significant paths in the model that suggested heightened risk of alcohol use at Time Three, as well as several paths significant only for either men or women. Both pre-college normative perception and attitude had significant positive effects on fall alcohol use. This finding suggests that, for pre-college normative perception, the more alcohol one perceives most others drink, the more liberal one perceives most others' attitudes toward alcohol to be, and the more drinking one thinks his or her friends expect in terms of one's own use of alcohol, the greater will be one's use at Time Two. In the same fashion, the riskier one's attitudes (cognitive and affective) toward drinking, the greater one's fall use of alcohol for this group. For both White men and White women, social identity was found to contribute to increased desires for status on campus. The greater the quantity and frequency of one's fall alcohol consumption, the greater one's social identity with a risky social environment. Higher pre-college normative perceptions contributed to even higher (riskier) fall normative perceptions. Normative perceptions and personal attitudes from pre-college contributed significantly to fall alcohol use, which in turn contributed significantly to subsequent fall attitudes and normative perceptions, social identity, desire for social prestige, intention, and spring alcohol use. Alcohol use at Time Two had a direct effect on increased normative perceptions at Time Two. Social identity increases contributed to significant increases in fall personal attitude. Fall alcohol use had a significant and direct influence on subsequent drinking intention. A more liberal fall personal attitude toward alcohol contributed to an increased

drinking intention. Fall use of alcohol had a significant direct effect on spring alcohol use 3.

Other paths were significantly non-invariant (i.e., varied, were different) between White men and White women but were significant for both nonetheless. For each group, pre-college personal attitude contributed to a more liberal fall personal attitude; increased quantity and frequency of fall alcohol use contributed to a more liberal fall personal attitude.

The cluster of significant contributions of variables to one another presents a risky picture of alcohol use, cycling toward increased use, and the related elements that support it among White students. Further, findings suggest a social identity culture supportive of high-risk drinking, and a relationship of identity with campus and its drinking culture associated with desires for prestige on campus. All of this paints a picture of considerable risk for harm from alcohol use, the networked nature of elements influencing the alcohol culture on campus, and a multi-faceted intervention effort likely required for changing the culture toward lower risk use, given the multiple sources of contribution. The multi-faceted intervention needed here is consistent with other research (NIAAA, 2002). This study offers a view of how those interventions might link together to inform one another in order to maximize effectiveness.

Summary for Research Question Four

There are few common variables upon which to focus interventions for all groups. The only clear ones across all five racial-ethnic groups in the study and for White men and White women are pre-college personal attitude and preventing risky increases in alcohol use from summer to mid-fall. Attitudes are known to be particularly difficult to

change, but also to have the character of converging toward a general attitudinal norm, so efforts to either prevent lower risk attitudes from moving toward a higher risk norm or to shift higher risk attitudes downward may be limited in success. However, by knowing some of the contributors to the development of pre-college attitudes for the different groups, it might be possible to make some headway by addressing the significant contributors to fall personal attitudes, a predictor with significant total effects for all groups in the study except Latino/Latina students. Alcohol use has many contributors not modeled in this study (e.g., alcohol availability, type of residence, alcohol cost, campus policy and enforcement, local laws and enforcement, socializing options) (NIAAA, 2002). The significant contributors to fall alcohol use in the study were pre-college personal attitude for all students studied and pre-college normative perception for all groups in the study except Asian Pacific American students. Efforts to address normative perceptions ahead of matriculation could be valuable in a targeted intervention (i.e., addressing the perceptions a given racial-ethnic group may hold).

All groups had significant total effects deriving from social identity, whether they were effects on spring alcohol use or another variable in the model. For Latino/Latina American students and for Multiracial/Biracial American students, the total effects from social identity on other variables were both positive and negative. It is unclear the role this variable has for these students, as it appears that it could serve both as an element of risk (positive total effects) or potentially one of protection (negative total effects). It is also possible that the negative or positive effects are not a reflection of risk or protection but of an artifact of the model that diminishes the contributions found, such as a suppressor effect (Maassen & Bakker, 2001) from variables early in the model or simply

that, in the case of the negative total effects, the model has already accounted for the effects of this variable through other ones. Further research is needed to understand this variable, particularly for these two groups.

No additional variables emerged as elements for intervention for all racial-ethnic groups. For the White American students, however, there were more sources for possible common intervention among both men and women in this group. Several variables (i.e., status value, perceived behavioral control, and intention) could be the focus of developing interventions targeting White men or White women, or potentially both with further study about the variables and the roles they play. Potential variables for intervention focus addressing both White men and White women included fall personal attitude and normative perception. Doing this, however, holds special challenges because students with the riskiest behavior often perceive the norm most accurately (Carter & Kahnweiler, 2000), so even if the assumption of social norms theory holds true—that correcting normative (mis)perceptions to the accurate norm through social norms campaigns can reduce alcohol use—correcting any misperception may or may not make a significant difference for behavior among this group since the difference between perception and reality may be small for some subgroups (e.g., Greeks, Carter & Kahnweiler, 2000). For this group, a focus on the variables contributing to personal attitude and to normative perception may be useful to consider as targets of intervention, thus potentially indirectly shifting the higher risk attitudes and perceptions to a lower risk place.

Limitations of the Study

There were a number of limitations to the study that must be considered in evaluating the utility and generalizability of this investigation. That the study was of first-year students at a single, predominantly White, state institution with a unique racial profile (35% students of color) is an important consideration. Although the indicators of percentages of campus students who consumed alcohol in the last month and those who engaged in heavy episodic drinking in the last two weeks are helpful in comparing this sample to state and national samples, the study was nonetheless of one institution. The sample was representative among most groups in the first-year cohort but was more heavily represented by women than were present in the first-year class. Furthermore, in the African American/Black group, there was an under representation of men, making interpretation of that analysis more tenuous.

The study was originally developed to apply latent variable structural equation modeling to the data. However, attrition in the original sample, some of it due to a serious campus server failure as previously noted, called for substantial adjustments in order to retain the opportunity to examine the data by race-ethnicity and by gender where the sample size would permit. Thus, variables were developed into scales from which single index scores could be derived and applied to path analysis (measured variable structural equation modeling) rather than having three or four indicators from smaller subscales to form several indicators for each latent variable. One result of the shift from latent variable SEM was the need to develop theoretically combined measured variables rather than theoretically distinct indicators to load on a latent variable (e.g., openness to normative influences). This meant that the contributions of normative perception

(combines social norms theory and theory of planned behavior) and personal attitude (combines social norms and planned behavior as well) are not theoretically distinct in the analyses.

Particularly among several of the racial-ethnic groups (African American/Black, Latino/Latina American, Multiracial/Biracial American and to a lesser extent Asian Pacific American students and even White men), sample size may have limited the ability of the model to detect some variable effects, a Type II error. Because of this concern one should interpret with caution especially the non-significant effects among these groups. Although the lack of significant effects might be explained through the specific subcultures within student groups, measurement artifact (such as a suppressor variables), or other elements not addressed in this study, the concern over sample size is not to be overlooked.

Analysis of the White American subgroup by gender was important to the interpretation of the model and related variable effects for White students. A number of effects significant for White students in the racial-ethnic groups analysis were found in the by-gender analysis of White men and White women to be significant only for men or women but not both. Additionally, some of the effects that were significant in the analysis by gender were not detectable when the gender groups were combined. It is possible, if not likely, that analysis by gender of other subgroups, if the sample sizes were sufficient, would have demonstrated differences in effects as well. The limitation of sample size precluded analysis by gender and race-ethnicity simultaneously for most groups, perhaps preventing detection of some potentially significant effects among

variables related to gender. This finding points to the importance of examining groups by gender and racial-ethnic group simultaneously in future research.

The status variable was developed to have two indicators in determining scores for that variable. However, when the indicators together were examined for scale reliability among the different racial-ethnic groups, the indicator was not reliable for some groups, perhaps because of the language used in them. A decision was made to use a single item and to derive test-retest reliability. This resulted in a better indicator, but was not ideal in trying to examine a newly introduced variable. That its role was statistically significant for White women, the largest subgroup sample, is important to examine further. There is also the possibility that a more developed scale, larger subgroup samples, and a model using all elements at all points in time could detect significant effects among more groups.

The measures explained limited variance of several variables, including status value, social identity/self-categorization, and perceived behavioral control, contributing potentially to their limited contributions for some groups. The two alcohol use variables, including the one that served as the outcome endogenous variable, were scale scores just like the ones developed for the other variables. The individual items related to quantity and frequency of past 4-week drinking (Clapp et al., 2003) and frequency of past 2-week heavy episodic (five or more drinks in a row) drinking. In the original latent variable structural equation modeling design, this variable was to have each item load separately so that its role could be detected in the variable called riskiness of alcohol use rather than alcohol use. As developed, this measure is a rudimentary scale score of alcohol use but is

unable to separate increases in one indicator versus another, just an overall increase in use. The ability to test true model relations via latent variable SEM would be helpful.

The model itself may be a limitation. Pre-college alcohol use was not modeled in the study when it could have helped explain differences detected between racial-ethnic groups or between men and women for White students. Due to space limitations in the pre-college survey, not all variables could be modeled at Time One; in essence normative perception and personal attitude were first in the model and the later variables reflected effects above and beyond these earlier ones, including fall alcohol use. As the model was developed, with two exogenous variables (consistent with the theory of planned behavior) and including intermediate elements less developed for such use (i.e., status value, social identity/self-categorization), detection of important effects later in the model may have been prevented. That any significant effects were found beyond these initial three variables points to the contribution of campus environment. A model that included each variable at each of three points in time and their contributions to one another could help develop a clearer understanding of variable contributions to one another.

On the other hand, the model did provide a pre-college view and one looking at two variables over time. Probably an earlier Time Two and Time Three survey, say within two weeks after school began and prior to Thanksgiving, might have demonstrated any substantial influences that by November had already occurred. This is consistent with alcohol-related research that suggests the first six weeks of college are a pivotal transition time (IOM/NRC, 2003). The study method was meant to examine relationships of the variables but not changes in individual drinking patterns or related variables over time as growth modeling can do. Both types of study are needed.

On a final note, a criticism of this study in light of Astin's (1993) IEO (Input-Environment-Output) model is that there were few pre-college (input) variables except for personal attitude toward drinking; normative perception of others' drinking, approval of drinking, and expectation of one's own drinking; race-ethnicity and, in the case of White men and women, gender. Family income, parent's educational attainment, prior use of alcohol, initial age of intoxication, and generation status were not included in the model, for example. One might say that the other elements, attitude, perception, race-ethnicity, and gender were in some ways possible proxies for these other variables and thus likely accounted for their contributions in some way. It is also important to note that although the IEO model seeks to examine the effects of college environment above and beyond input variables because it models a statistical control of those variables, the purpose of this study was to examine the conditional effects of some input variables (i.e., race-ethnicity and gender) on the contributions of model variables to the outcome variable. Examination of conditional effects of such variables on subsequent outcomes is a limitation of the IEO model, of hierarchical linear modeling used frequently in IEO studies (e.g., Astin, 1993), and an area of needed study (Pascarella & Terenzini, 1991).

Implications for Theory

This study suggests areas for theoretical consideration deriving from analyses related to the hypothesized peer influence context model of alcohol use among first-year college students. Following are implications from the social-psychological theories applied in the study and integration of explanations offered through student development theory, and through acculturation theory.

In general the study supported the notion that both process (when change occurs and when relationships between variables may peak or diminish) and content (what variables are explanatory and for whom) are important to developing theoretical explanations of student drinking. Although most of the theoretically supported research addressing alcohol use among college students and other youth has been psychological in nature, this study supports the integration of both psychological and sociological perspectives to explain alcohol use. This finding is consistent with Astin's (1993) IEO (input-environment-output) model and with calls from Pascarella and Terenzini (1991, 2005) for the integration of sociological perspectives of college impact such as that offered by Weidman's (1989) model of college student socialization that includes variance in on-going connections to home.

Social-Psychological Theory

Social Norms Theory

The findings related to social norms theory (Perkins & Berkowitz, 1986) from this study are inconclusive but do raise questions about its application to reducing college student drinking. Although the normative perception construct was a combination of both social norms theory elements and subjective norm from the theory of planned behavior, the limited contribution of pre-college normative perception to fall personal attitude raises questions about the assumption of social norms theory that normative perception contributes to subsequent alcohol use through personal attitude. On the other hand, it did make a direct contribution for most groups to alcohol use 2, possibly related in part to the inclusion of subjective norm in the variable. Further research is needed to explore the assumptions of social norms theory. Even a recent article by Perkins, Haines, and Rice

(2005) using a large national data set highlights possible potential conditional effects of group while at the same time strongly advocating the use of social norms theory.

Theory of Reasoned Action/Planned Behavior

This two-theory family demonstrated usefulness in explaining alcohol use among students but there were findings that suggested additional elements were important. For instance, the role of drinking intention posited through the theory of planned behavior (Ajzen, 1985, 1991) to be the most direct predictor of subsequent behavior was significant only for White students (White women) and for Multiracial/Biracial students above and beyond prior fall alcohol use. Indeed, for all groups in the study mean drinking intention was quite a bit higher than the actual use, unlike the mean for previous alcohol use (alcohol use 2) which was more consistent with future use (alcohol use 3). This finding may be an artifact of the kinds of items in the scales, interval in intention and ratio in alcohol use. However, as Ajzen (2002b) has noted, when intentions and beliefs are not well formed, past behavior is expected to be a significant contributor to future behavior.

The role of past alcohol use in explaining future alcohol use directly, even with drinking intention in the model, was found in the Bentler and Speckart (1979) study. Using a college sample, they applied latent variable SEM to test a model to explain student alcohol use based on the theory of reasoned action (the earlier version of the theory of planned behavior differing from it in that the later theory included perceived behavioral control) and an extension of that model that included the direct contribution of previous alcohol use to subsequent alcohol use. Intention did not mediate all of the contribution of past behavior on later behavior. The Bentler and Speckart extension fit

the data adequately, whereas the other models tested from the theory of reasoned action did not. Together, this study and the work of Ajzen (2002b) and of Bentler and Speckart suggest that including past behavior as an extension of the theory of planned behavior when applied to the study of alcohol use among college students may be important, particularly in studies of first-year students in transition who are more vulnerable to the initiation or exacerbation of alcohol misuse (Weitzman et al., 2003).

Personal attitude and subjective norm appeared to be important in the model, though that is somewhat difficult to discern since those measures were combined with related measures from social norms theory. Perceived behavioral control was significant in its contribution to spring alcohol use only for White men, but given the high-risk nature of alcohol use in that population, it is an important element to retain and continue to explore for this group and for men in other racial-ethnic groups and at different points in time.

Social Identity/Self-Categorization Theory

Social identity/self-categorization theory (Turner 1982, 1985) appeared to be valuable in explaining alcohol use and related variables for a number of groups in this population. The variable representing the theory was comprised of elements that hold potential to serve as risk protection for some groups and elements that might serve to increase risk for others. Although the key measures and their contributions to the variable are not yet fully understood, the study points to the usefulness of this theoretical frame for examining one's relationship to a broader environment. It confirms the importance of group identity in other research applying this theoretical perspective (Johnston & White, 2003) and allows a more proximal view of reference group and its potential influence

than does social norms theory. This study suggests the potential application of social identity/self-categorization to studies of other phenomena related to college students and other adolescents and to their experiences, identities, and environments. This potential exists especially because social identity/self-categorization offers more opportunity for proximal measures of peers than are often used (e.g., students in your residence hall, aggregates in a major). With latent variable SEM, for instance, the variable and its indicators could be tested across groups to discern which specific items were more relevant for which groups.

Status Construction Theory/Status Theory

Although contributions of status value to spring alcohol use and other variables in the model were limited, the perspective of status construction theory (Ridgeway, 1991, 2000; Ridgeway & Balkwell, 1997) offers some potential for understanding student drinking. White women, in particular, had significant direct contributions to spring alcohol use from status value and to perceived behavioral control. Further, for this group, pre-college normative perception significantly and directly contributed to their desire for social prestige. It is possible that a similar pattern would be detected for women in other racial-ethnic groups or that the conditional effects of some other variable (e.g., social identity/self-categorization since it was a direct, significant contributor to status value) could help reveal any additional relationship of status value to model variables not detected in this study. Given the increases seen in drinking among women in recent years (IOM & NRC, 2003), investigation of the contributions of this theoretical element is important. Further, status beliefs regarding “most people” as Ridgeway et al. (1998, p. 332) have advocated are their own kind of normative belief that might be open to

intervention. Evidence of a status mechanism may be in operation across adolescence in relation to other health and substance abuse behaviors. Another study of youth found substance use (cigarettes) related to popularity, what one might term social status. Valente et al. (2005) found that popular students were more likely to smoke but did not find a theoretical explanation for it. Status theory may be an explanation for the positive association found by Valente et al. between popularity and smoking among middle schoolers. Together the Valente et al. study and this one suggest that health behaviors in adolescent culture may be related to popularity, or status, and that integrating status construction theory (Ridgeway, 1991; Ridgeway & Balkwell, 1997) may inform the broader context of peer influence throughout adolescence.

Student Development, Human Development, and Racial Identity Development Theory

Both student development theory and more general human development theory may help explain some of the findings. Student development theory offers population specific insight into some of the findings. Chickering and Reiser (1993) have provided a developmental view of college students particularly useful to the examination of the transitional year from high school to college. Their work focuses on seven key “vectors” (p. 43), as they call the “major constellations of development” (p. 44), outlined as a model to aid understanding of college student development, as well as that of adolescents, young adults, and adults more generally. Although Chickering and Reiser have indicated that development may occur in any of the vectors simultaneously, they have suggested also that development will tend to be more concentrated in several related vectors at a time, with achievement of the earliest vectors necessary before achieving the later ones.

Particularly relevant for first-year students transitioning to a college environment and facing new social and academic expectations as well as increased choices and changing relationships with parents and other family members are the first several vectors: developing competence, managing emotions, moving through autonomy toward interdependence, and achieving mature interpersonal relationships. For example, students are not only entering a new academic environment requiring new competencies, but they are also struggling with learning how to be a part of a group and are also focused on fitting in socially as they try to make choices about their own needs and priorities while also navigating the priorities and agendas, real or otherwise, of a larger social group. Students' desires for being seen as socially and interpersonally competent, for instance, may put them at risk for increased alcohol use or abuse if their peers are drinking and if being seen as socially competent includes drinking as suggested by Snyder and Sedlacek (2003) and by this study for some groups (e.g., White women). By example, this view would suggest that the role of social prestige for White women and the role of perceived behavioral control for White men may relate somehow to the development of social competence (a word also used by Ridgeway et al. [1998] in status construction theory) in a new environment.

Similarly, in a time of substantial transition students are likely to experience a wide range of emotions, both exciting and scary, positive and negative, both potentially difficult for them to learn to manage. Learning to recognize these feelings as important signals and then learning to respond to them in healthy ways is a key aspect of achieving this vector (Chickering & Reiser, 1993). Learning the balance between responding on impulse and not responding at all takes time, experience, and a developmental awareness.

Choices about alcohol may or may not be made with forethought based on one's own attitudes or intentions. Learning to recognize and behavioral choices, anticipating their consequences, and learning to manage one's emotions may be another way to explain some of what occurs—or needs to occur for safety and health—around alcohol for first-year students. Students struggling with a range of emotions, and many of them away from family supports for the first time, may choose to respond to their increasing awareness of them in unhealthy ways, perhaps including increased use or abuse of alcohol.

Students transitioning to a college environment are seeking new peer groups and ways to relate to others and build meaningful relationships. Given their developmental status they are vulnerable to the need for approval of others, especially peers, as they struggle to balance the need to make choices for themselves with the longing for inclusion, and the perceived risk of not being included if they do not act in accordance with the real or perceived expectations of the group (Chickering & Reiser, 1993). This perspective may also explain some of the risk elements for students of color, in particular any positive contribution to or from social identity/self-categorization, a variable comprised largely of image, similarity, and being part of the larger group, particularly the larger predominantly White group on the study campus. The significant contribution to status value by social identity/self-categorization for all groups emphasizes this relationship of drinking and social identity and status or competence, an area of special vulnerability for traditionally aged college students, as noted earlier. For students such as Asian Pacific American students and African American/Black students, racial identity development theory may assist in offering explanations of protection or risk. It may be

that as students engage in the process of racial identity development (e.g., Helms, 1995), they also shift in vulnerability to increased alcohol use or protection from increased use if their racial-ethnic group tends to drink less overall and if they identify more closely with that group.

Finally, traditional age 17-20 year old entering college students are in the process of developing mature interpersonal relationships. As they work through this developmental task, they are learning to respect differences, even embrace them, and to develop healthy intimate relationships. The challenges in this cluster may mean that students will sometimes pursue or fall into unhealthy relationships in order to feel satisfied. In a campus environment and in peer groups, alcohol may be readily available and its use promoted, placing students at risk for unhealthy or abusive or otherwise harmful encounters with others, particularly when they are intoxicated.

Together, the view that Chickering and Reiser (1993) have presented of adolescent college student development, the major life transition most traditional age first year students are making when starting college, and the culture of acceptance of alcohol use by students—a normative view of alcohol use, if not abuse, as a rite of passage for college students in this country—place these first year students in a precarious circumstance. They are eager to take on adult roles, for many to include drinking, and to have adult experiences, and yet are struggling with developing the capacities that allow them to do that in healthy ways.

Chickering and Reiser (1993), Gilligan (1981), and Belenky et al. (1986), as noted earlier, and Kegan (1982, 1994) also offer insight for the findings related to White women in the study and perhaps also to the findings related to students of color. Gilligan

and Belenky et al., in particular, have suggested the general nature of women's development as interconnected and informed by a network of sources. For White women, the only group of women analyzed by gender in the study, this certainly appeared to be the case. That was the group with the greatest number of significant paths by far and the greatest number of variables offering significant effects to the model. Alcohol use by White women appears to be explained by a complex network of construct relationships, as work by Gilligan and by Belenky et al. would anticipate. Chickering and Reiser made changes to the initial version of the seven vectors (Chickering, 1969), moving to an earlier place the task of developing mature interpersonal relationships, based in part on Gilligan's work and in recognition that "the interplay between autonomy, interdependence, and intimacy is complex" (p. 24).

Kegan's (1994) work has recognized the role of interdependence as well, building in part on Gilligan (1981) and on Belenky et al. (1986). He acknowledged the concerns such authors have raised regarding "differentiation" versus "separation" (Kegan, 1982 in Chickering & Reiser, p. 29), the latter of which is a Euro centric, White, male representation and not as representative of either women or of persons of color whose traditions or histories may hold other world views (Kegan, 1994). In his more recent work, he said he has come to "repent" (p. 221) his previous assertion that having agency and being connected were necessarily exclusive. Indeed, he suggests now that both can exist simultaneously. For White women in this study working on the first several vectors in the Chickering and Reiser model (1993), this may mean a particular vulnerability to various sources of influence. On the other hand, students of color, both men and women, who do not identify with the dominant White campus culture, may be somewhat

protected from some sources of influence (e.g., identification with campus culture and drinking levels of that culture). For students of color who do identify with the dominant White campus culture, the risk of increased use or abuse of alcohol may be greater. Or perhaps instead they are able to maintain agency of choosing not to drink while becoming increasingly identified with the dominant White campus culture. Kegan suggests that development is about increasing differentiation or increasing autonomy, both allowing for connection, deciding *for* oneself if not *by* oneself, summarizing much of what is to be accomplished in the first several of Chickering's vectors.

Our culture has high expectations of adolescents, that they be "employable, a good citizen, a critical thinker, emotionally self-reflective, personally trustworthy, possessed of common sense and meaningful ideals" (Kegan, 1994, p. 19), that our culture expects of them a "distinct level of consciousness" (p. 36). On the other hand, he says, we need to examine "whether adolescents can give us what we want" (p. 36), if they are capable of doing so. Our culture gives two distinct but conflicting messages about the emerging sexuality of adolescents, both probably unrealistic he says. He says we ask both that they abstain from being sexually active and that we tell them to engage in safe sex. Using his analogy, one can see that college students are instructed by the legal system that they are not to use alcohol, by health findings that it is dangerous for the development of their brains (Tapert, 2004/2005), and by the culture that it is acceptable and actually expected that students will drink. In response to the current state of alcohol use on campus, the NIAAA (2002) has said that the answers lie in changing the culture of drinking on campus and that the question is how to do that. One might further extend this to say that we must examine carefully whether this is possible without also working to

change the dominant, or dominantly represented, culture and view of alcohol use in our society.

Racial identity development theory may be useful in furthering explanation or understanding of patterns of alcohol use among first-year students on a predominantly White campus. For example, it may be that for African American/Black students who are new to being in a predominantly White environment (for example the Pre-encounter or Encounter stage of Cross' Black Racial Identity development theory, in Helms, 1990) may be more vulnerable in a drinking environment if that is not part of their earlier experience because of their efforts to fit into the dominant White culture (Pre-encounter stage) or to reduce the to anxiety and confusion of the Encounter stage that plays a role in reference group orientation (Helms). Their efforts to find a place and to fit in socially may make African American/Black students more open to identifying with the perception of campus culture and thus acting on those perceptions. For students who might be in this Encounter stage, for instance, and who also may be experiencing the array of emotions that Chickering and Reiser (1993) have presented as they transition to college, their vulnerability to increased use or abuse of alcohol may be heightened. Related theoretical explanations may exist for other students of color.

Astin's involvement theory (1996) suggests that the quantity, frequency, and intensity of involvement will shape a student's experiences, and that peers are exceptionally potent in that process. In terms of this study, involvement theory might suggest that the more often one drinks or does not drink with peers, how much one drinks with peers, and the intensity of that drinking or non-drinking environment, the stronger a role those peer relationships may hold. By example, drinking large quantities of alcohol

during drinking games, during emotionally intense times such as at major athletic events and in dating environments and Greek functions, and doing so frequently might contribute to increased likelihood of abuse. On the other hand, for a student who rarely drinks but does not drink much, and does not tend to do so in emotionally intense circumstances, perhaps the combination would not necessarily lead to increased abuse. In this study, the increased level of social identity and emotion of wanting to have social prestige combined with one's own risky attitudes, or sense of peer pressure, or views of others' drinking may combine to create greater risks explained in part by involvement theory. Similarly, the theory suggests possible ongoing protection for students who frequently do not drink, do not drink large quantities, and who make those choices in involved, committed ways, perhaps with people important to them. Having all three elements, quantity, frequency, and intensity, could be a heightened risk or protective element to be explored in future research. Investigations that measure the nature and degree of involvement may offer clearer information on the role of involvement, with whom, and for whom.

Acculturation Theory

Landrine and Klonoff (2004) offer "an operant theory of acculturation" (p.527) applied to ethnic-minority health behavior that has been examined in light of alcohol use. They suggest that other theories of acculturation, particularly those that use bicultural dimensions, are not useful to the health behavior professional. This is in part, they say, because the theories cannot seem to explain increases and decreases in health behaviors at the same time. Their theory is developed from learning theory. Their theory argues that extinguishing healthy or unhealthy behaviors and acquiring healthy or unhealthy ones are

separate learning processes. Further, it says that acculturation can have opposite effects for different ethnic groups around the same health behavior. They explain that African American/Black persons have been found to increase alcohol use with acculturation to the dominant White culture but that this is not true for Japanese immigrants from a society highly ritualized around alcohol use. In the context of college student alcohol use the theory can help explain acculturation to the generally high-risk drinking environment for all students who have less risky drinking experiences but especially for students of color on predominantly White campuses, whether first-generation American or not.

Implications for Policy and Practice

Pascarella and Terenzini (1991) have said that knowing when change occurs in college and for whom is important. This study suggests that pre-college normative perceptions and attitudes regarding drinking, likely informed partly by one's own choices about alcohol use, make important contributions to increased vulnerability for first-year students. Although not definitive in its findings, the study strongly suggests that the first two months of college are a high-risk time for increasing alcohol use, consistent with research by Weitzman et al. (2003). This important time from pre-arrival to campus into the first month or two of school should be the focus of much prevention and intervention efforts.

Campuses wanting to reduce the harm of alcohol misuse among students have sometimes focused efforts on social norms campaigns. Two concerns suggested by this study relate to the focus of prevention and intervention efforts. First, the role of normative perception is still unclear but it does not necessarily appear to influence behavior through personal attitude for most students. It also appears to have conditional

effects by race, ethnicity, and gender. Colleges are cautioned, should they choose to develop such campaigns, to make sure that they are based on data for the group addressed in the messages. A singular campus campaign with a universal message may not work, and, worse, may increase use for some students (Keeling, 1999, 2000). The study has also demonstrated the complexity of the peer context and many of the contributors to alcohol use. It should be clear that a variety of techniques and practices must be used in order to address this very difficult issue. For White women who had so many significant sources of contribution to alcohol use, this may be even more critical.

The study suggests several themes for policy and practice toward reducing problematic alcohol use among college students. It highlights the importance of pre-college normative perception and personal attitude (either affirming lower risk attitudes or challenging higher risk ones) in contributing to subsequent fall term alcohol use, suggesting the need for pre-matriculation intervention. The normative perceptions for one group may be substantially different than those for another group, as with their personal attitudes, suggesting the need for clearer understanding of those views on one's campus and likely need for targeted intervention. In turn, this of course suggests the need for regular assessment of one's entering student population regarding alcohol use and related contributing elements and evaluation of the data for conditional effects of race, ethnicity, and gender.

The study also suggests that for some groups, booster interventions during fall term may be of value in trying to reduce possible increases in alcohol use. Asian Pacific American and White women, for instance, had significant effects from fall normative perception as well as pre-college normative perception, suggesting a potential need for

additional intervention later. The same may be said of White students and their fall attitudes toward drinking after entering college, again, suggesting the potential usefulness of a fall term booster intervention. For White women and for Multiracial/Biracial students the study suggests that a focus on interventions targeting drinking intention may serve as a tool to prevent increases in alcohol use and potentially to help reduce any drinking that is already high-risk since intention had a significant direct effect on spring alcohol use for both of these groups.

Findings suggest for all groups in the study the importance of limiting access and availability of alcohol since earlier use contributed significantly to increases in subsequent use. Such limits may come in a variety of forms including working with local police to enforce relevant laws, collaborating with local town leaders to limit sale of reduced-price drinks and to regulate the number of locations that can sell alcohol (Hingson, 2005), substance-free housing, dry athletic events, deferred rush for social Greek organizations, and teaching resident assistants and resident directors the importance of their own consistent enforcement efforts in preventing increased alcohol use among first-year students.

The limited contribution of variables beyond the first endogenous one, fall alcohol use, except for White students, may be a result of sample size, but is also likely in part due because the major transition period to the campus environment in the first 6 weeks of school is pivotal and drinking patterns have already been influenced in the most substantial ways by Thanksgiving. Early focus on prevention and intervention is suggested by the findings in this study, targeted in the first month or two of school and prior to matriculation.

Implications for Future Research

This investigation is good as a preliminary integration of key theories and related variables aimed at understanding the process and elements of peer context, when the contextual elements are important, and for whom. The study points to potential differences in experience (e.g., social identity/self-categorization) on campus among racial-ethnic groups and by gender even within a single racial-ethnic group (White students in this study). It demonstrates relationships from new elements (status value) or under explored elements (normative perception, perceived behavioral control, social identity/self-categorization) as potential contributors to or protection from high-risk drinking, as well as elements and processes to study further for possible intervention design. The study also highlights the need to use methods that can detect differences in relationships between variables by racial-ethnic group and gender simultaneously. Overall, the study suggests differences between such groups as other researchers have found or suggested (Campo, 2003; Carter & Kahnweiler, 2000; Keeling, 1999, 2000) while augmenting what is known about these possible differences and theoretical explanation of them.

More work is needed to understand further the variables in the model and to develop measures of variables not well explained in the model (e.g., status value, perceived behavioral control, social identity/self-categorization) and, eventually, to use the variables in a more comprehensive model (i.e., modeling all key variables at three or more points in time to examine effects of all variables on one another). For instance, social identity/self-categorization produced both negative and positive significant effects among the groups. Further investigation to understand this variable and its particular

subscales is important. The relationship of social identity/self-categorization and status value is equally important since for all groups there was a significant positive contribution from social identity/self-categorization to status value. The inverse relationship of normative perception and personal attitude among White students over time was puzzling and needs further investigation.

The measurement separation of the two theoretical representations (rather than a single scale per variable) of normative perception and personal attitude is required in order to more clearly understand the roles of those elements and the relevance of the theories in prevention of high-risk college drinking.

Future research should also focus on increased understanding of perceived behavioral control, particularly for White men, and if warranted should develop an intervention to test in that population. A similar investigation regarding status value for White women should be undertaken to understand that variable better and to discern if a “status intervention” (Cohen, 1983) might be useful to reduce high-risk drinking in this population.

Different Institutional Type

More advertising is targeting youth, especially Latino/Latina and African American/Black youth; women’s rates of drinking are increasing. Study of the theoretical elements and related models in different types of institutional environments (Hispanic-serving Colleges and Universities, Tribal Colleges, Historically Black Colleges and Universities, liberal arts colleges, colleges with religious affiliation or none, colleges within regions of the country, community colleges, men’s and women’s colleges) is important. Most likely, the culture on these campuses will produce different significant

and non-significant relationships among the variables and point to different interventions. Additionally, investigation between campuses with different types of alcohol policies (e.g., dry campuses vs. allowing alcohol for 21 years and older; permitting alcohol at athletic events of not allowing such advertising) could offer insight into how the contributions of different variables might vary in different policy environments.

Method and Model

Future research should model all variables of interest over three points in time to learn more about the direct and indirect effects of pre-college, early fall, and later fall or early spring iterations of each variable. This earlier fall term measure may also help discern significant effects that for some groups may occur much earlier in the term but may not have been as readily detectable in the current study (e.g., effects of status value, social identity/self-categorization, intention, and perceived behavioral control). A sample size adequate to allow for 75% attrition as was experienced in this study and still permit latent variable structural equation modeling would be valuable. Latent SEM can account for more error in the model and also permit examination of the differences in measurement among the groups. Future research should also allow for a latent variable representation of drinking (i.e., riskiness of alcohol use) as well as a separation of quantity, frequency and heavy episodic drinking in a model. There are likely differences by gender, race, and ethnicity in the contributions to these outcome variables. Growth modeling to allow a view of individual change in drinking patterns and related variables would provide an additional dimension to explain college drinking by race, ethnicity, and gender not available in this study.

Conclusion

This study is useful because it begins to examine peer context in an integrated way, examining both process and content in a temporally based model using relevant theories and their associated variables, and because it initiates theoretical examination of difference in process and content by racial-ethnic group and by gender. Additionally, the study has introduced status value and related status characteristics theory and status construction theory as potential contributors to the discussion of alcohol use on campus and extended the application of social identity/self-categorization theory in the study of college drinking. Both of these variables look promising for further study in the context of college drinking. The study limits related to sample (self-report, size, convenience, and racial-ethnic-gender make-up), the model itself (not all elements were measured and modeled across all points in time, pre-college drinking measures were not modeled, and normative perception was a theoretically combined scale due to sample size), and the limits of SEM with measured variables (cannot account for as much error as latent variable SEM and does not provide both measurement and structural analysis) mean that findings should not be generalized without replicating or extending the current investigation except, cautiously, perhaps in the case of White men and White women from the gender analysis. However, the study does provide important building blocks for future research and is generally consistent with key previous research upon which the model and measures were built.

APPENDIX A

Extended Demographics Table¹

	African American/ Black (7.2%) n=60	Asian Pacific American (14.6%) n=123	Latino/ Latina American (6.1%) n=51	White American (65.6%) n=549	Multiracial/ Biracial American (6.5%) n=54
Gender					
<i>Men</i>	13.0%	31.7%	37.3%	38.4%	50%
<i>Women</i>	86.7%	68.3%	62.7%	61.6%	50%
Generation status: One parent foreign born or self foreign born (naturalized citizen or permanent resident)	28.3%	93.5%	49%	9%	50%
Annual parental income ²					
\$49,999 and below	16.7%	17.9%	13.7%	5.1%	13.0%
\$50,000-\$99,000	31.7%	26.8%	27.5%	19.4%	20.4%
\$100,000-\$174,999	20.0%	22.0%	26.9%	31.4%	24.1%
\$175,000 and above	6.7%	8.1%	5.9%	13.1%	14.8%
Father's education: Bachelor's and higher	61.7%	74.8%	60.8%	77%	66.7%
Mother's education: Bachelor's and higher	53.5%	61.7%	52.9%	73.8%	70.3%
Religious preference					
Agnostic	1.7%	3.3%	3.9%	6.0%	5.6%
Atheist		3.3%	2.0%	4.9%	9.3%
Buddhist		9.8%	2.0%		
Catholic	11.7%	14.6%	35.3%	29.5%	18.5%
Hindu		6.5%			1.9%
Jewish			5.9%	20.2%	16.7%
Muslim		7.3%	2.0%	<1%	1.9%
Protestant	60%	27.6%	9.8%	19.3%	22.2%
Other	11.7%	4.9%	7.8%	7.1%	11.1%
No Preference	15%	22.0%	31.4%	12.2%	13.0%
Living in residence halls	93.3%	85.4%	84.3%	95.3%	96.3%
In top 10% of high school class	51.6%	60.2%	55.1%	57.7%	42.6%
Reported some disability (e.g., physical, psychological, learning)	8.3%	15.4%	17.6%	11.1%	11.1%
Expect to earn a degree beyond undergraduate (e.g., masters, doctorate, law, medical)	86.6%	87.8%	82.3%	81.6%	87.0%

	African American/ Black (7.2%) n=60	Asian Pacific American (14.6%) n=123	Latino/ Latina American (6.1%) n=51	White American (65.6%) n=549	Multiracial/ Biracial American (6.5%) n=54
College of advising					
<i>Letters & Sciences</i>	36.7%	35.8%	51.0%	31.5%	29.6%
<i>Second most frequent</i>	Behavioral and Social Sciences; Life Sciences; Journalism (11.7% each)	Engineering; Business (15.4% each)	Engineering (13.7%)	Behavioral and Social Sciences (13.5%)	Behavioral and Social Sciences; Engineering (14.8% each)
Age consumed first alcoholic beverage					
<i>Never</i>	28.3%	26.0%	25.5%	11.9%	7.4%
<i>≤ 12 years</i>	8.3%	8.3%	17.6%	6.0%	7.4%
<i>13-15 years</i>	26.7%	20.3%	25.5%	35.2%	29.7%
Age first experienced intoxication from alcohol					
<i>Never</i>	38.3%	48.0%	33.3%	17.8%	20.4%
<i>≤ 15 years</i>	13.3%	14.6%	37.3%	26.7%	18.7%
In the year prior to attending University Name, I drank alcohol frequently.	10.0%	13.9%	19.6%	27.1%	18.6%
In the year prior to attending University Name, I got drunk frequently.	8.3%	12.2%	15.7%	20.1%	13.0%
I expect to have a hard time adjusting to social life on campus (summer)	8.3%	29.5%	15.7%	22.0%	22.2%
Past 4 weeks number of days drank alcohol. (summer)					
<i>On no days in past 4 weeks</i>	60.0%	58.5%	45.1%	34.2%	42.6%
<i>Drank but once a week or less</i>	30.0%	28.5%	35.2%	37.7%	35.2%
Past 4 weeks number of drinks on typical drinking day (summer)					
<i>Drank no drinks in past 4 weeks</i>	60.0%	57.7%	43.1%	34.4%	42.6%
<i>1-3 drinks on typical day when drank alcohol in past 4 weeks</i>	31.7%	20.4%	21.6%	31.3%	26.0%
In past 2 weeks consumed 5 or more drinks on one occasion on NO days. (summer)	95%	82.9%	72.5%	64.8%	77.8%
Past 4 weeks number drinking days (fall)					
<i>On no days in past 4 weeks</i>	58.3%	45.5%	37.3%	25.5%	33.3%
<i>Drank but once a week or less</i>	26.7%	33.4%	27.4%	30.8%	33.4%

	African American/ Black (7.2%) n=60	Asian Pacific American (14.6%) n=123	Latino/ Latina American (6.1%) n=51	White American (65.6%) n=549	Multiracial/ Biracial American (6.5%) n=54
Past 4 weeks number of drinks on typical drinking day (fall)					
<i>Drank no drinks in the past 4 weeks</i>	58.3%	47.2%	37.3%	25.5%	31.5%
<i>1-3 drinks on typical day when drank alcohol in past 4 weeks</i>	25.1%	24.4%	25.4%	28.1%	31.5%
In past 2 weeks consumed 5 or more drinks on one occasion on NO days. (fall)	81.7%	72.4%	54.9%	47.9%	63.0%
Past 4 weeks number drinking days (spring)					
<i>On no days in past 4 weeks</i>	51.7%	49.6%	43.1%	22.2%	27.8%
<i>Drank but once a week or less</i>	28.3%	37.4%	21.6%	31.7%	37.1%
Past 4 weeks number of drinks on typical drinking day (spring)					
<i>On no days in past 4 weeks</i>	51.7%	49.6%	43.1%	22.4%	27.8%
<i>1-3 drinks on typical day when drank alcohol in past 4 weeks</i>	23.3%	27.6%	19.6%	25.7%	25.9%
In past 2 weeks consumed 5 or more drinks on one occasion on NO days. (spring)	76.7%	69.9%	62.7%	43.2%	53.7%
Alcohol is usually available where I socialize. (fall)	50%	44.3%	58.9%	68.8%	57.4%
I consider myself a drinker. (spring)	15.0%	21.9%	31.3%	40.6%	22.2%
I consider myself a non-drinker. (spring)	55.9%	59.5%	41.2%	26.7%	37.1%
I intend to join a fraternity or sorority. (summer)	26.7%	12.2%	9.8%	18.0%	14.9%
Intend to join a fraternity or sorority (fall)	11.7%	2.4%	3.9%	5.8%	5.6%
I have joined a fraternity or sorority (spring)	1.7%	11.4%	5.9%	12.0%	1.9%
Concerned about the drinking patterns of a friend a University Name	35%	46.7%	25.5%	38.5%	35.2%
I do NOT think campus policies related to student drinking are enforced strongly enough	36.2%	37.4%	27.4%	25.6%	33.4%
I have socialized frequently with my high school friends (fall)	53.3%	69.9%	74.5%	54.8%	53.7%

	African American/ Black (7.2%) n=60	Asian Pacific American (14.6%) n=123	Latino/ Latina American (6.1%) n=51	White American (65.6%) n=549	Multiracial/ Biracial American (6.5%) n=54
When asked about my friends, I think mostly of my high school friends. (fall)	41.7%	43.9%	49%	35.7%	42.6%
I keep in close contact with my parent(s) or guardian(s) (fall)	81.7%	82.9%	84.3%	85.6%	83.3%

¹ For an extended version of this table, see Appendix A.

² For each racial-ethnic group, between 25% and 31% of student reported not knowing their parents' annual income.

APPENDIX B

Welcome to Orientation for University of Maryland!

Survey One: **University New Student Census 2004**

Principal Investigator, Dr. William E. Sedlacek

Purpose: Maryland has conducted this important survey for over 40 years. It provides data for a variety of college research purposes. Reports are also used by different departments to plan programs and to anticipate what services can be most useful to students during their careers at University of Maryland. We ask for your Directory ID so that the University can do studies of student progress. This means that the data here can be linked, via your Directory ID, to other data such as your grades, financial aid package, participation in programs and services, and course work. The data are used, for example, to assist us in knowing what helps students succeed in school and what might cause difficulties. Hopefully, with your participation, the University can make its programs and environments even more conducive to student success.

Procedures: Participation in this online survey will take about 20-25 minutes of your time. It includes 94 items, including scales (e.g., Strongly Agree – Strongly Disagree), multiple choice, and fill-in. You are asked to mark your answers using the computer. Be sure to press DONE after item number 94 when you are finished to record your responses.

Risks: Risks to you as a participant are minimal except that information you share is being linked to your Directory ID and may be linked to other University data while you attend UMD and after you graduate.

Confidentiality: Linking this survey data to other University data means that your responses are confidential but not anonymous. Confidentiality is maintained by giving survey results in GROUP form only. NO INDIVIDUAL IDENTITIES are revealed and no individual responses are reported. Your name will not be linked to reports. Most of the reports and studies are done anonymously and without linking these data to any other data. The data you provide here are **NOT** part of your student record.

Benefits: By completing the student census, you help us make changes that will help all students. Students completing the relevant census survey items, will also be eligible to participate in another study this fall for which a number of participation incentives will be offered to select participants. Indirect benefits include support of studies and reports designed both to improve University programs and services, and environments and to improve our knowledge about college students generally.

Freedom to Withdraw and Ask Questions: Your participation is entirely voluntary. You may elect to participate now or not to participate, or you may complete any portion of the survey and stop at any time without penalty. (*Note.* If you stop early and wish to record your responses to that point, you must scroll to the end of the survey to press the

DONE button or your responses will be lost.) Your participation in this survey will not affect the services you receive on campus or your participation in other campus programs. You may ask an on-site staff member questions now.

Contact Information for Investigators: You may contact Renee Snyder who works for the principal investigator; her email is rbsnyder@wam.umd.edu. Or you may contact Dr. Sedlacek, principal investigator, directly at 0101 Shoemaker Hall, Counseling Center 301-314-7687.

Institutional Review Contact: Additionally, if you have questions about your rights as a research subject or wish to report a research-related injury, please contact: Institutional Review Board, University of Maryland, College Park, Maryland 20742; (email) irb@deans.umd.edu; (telephone) 301-405-4212.

By entering your Directory ID and password to initiate the survey, you are giving us your informed consent to use your data in ways such as the ones described above. Thank you for your time and participation.

Please enter your Directory ID and password to participate:

ID: RADIO BUTTON Password: RADIO BUTTON

Note. As you complete the survey, please be sure a mark appears for each of your selections. Press DONE at the end of the survey to securely record your responses.

Start the Census (RB) Clear Fields (RB)

Counseling Center
University of Maryland

APPENDIX C

University New Student Census 2004

1. Sometimes I refuse to believe a problem will happen, and things manage to work themselves out.

Strongly Agree Agree Neutral Disagree Strongly Disagree

2. I possess the necessary skills to attain my academic goals next semester.

Strongly Agree Agree Neutral Disagree Strongly Disagree

3. Leaders should be most concerned about facilitating positive social change in the environment.

Strongly Agree Agree Neutral Disagree Strongly Disagree

4. I would consider seeking study skills training while at the University of Maryland.

Strongly Agree Agree Neutral Disagree Strongly Disagree

5. When I have to make a decision I like to spend a lot of time thinking about my options.

Strongly Agree Agree Neutral Disagree Strongly Disagree

6. I will vote in November.

Strongly Agree Agree Neutral Disagree Strongly Disagree

7. Having social prestige on campus is important to me.

Strongly Agree Agree Neutral Disagree Strongly Disagree

8. I've more-or-less always operated according to the values with which I was brought up.

Strongly Agree Agree Neutral Disagree Strongly Disagree

9. In most ways my life is close to my ideal.

Strongly Agree Agree Neutral Disagree Strongly Disagree

10. Many times by not concerning myself with personal problems, they work themselves out.

Strongly Agree Agree Neutral Disagree Strongly Disagree

11. I would consider seeking counseling regarding career plans.

Strongly Agree Agree Neutral Disagree Strongly Disagree

12. Regarding religion, I've always known what I believe and don't believe; I never really had any serious doubts.

Strongly Agree Agree Neutral Disagree Strongly Disagree

13. The conditions of my life are excellent.

Strongly Agree Agree Neutral Disagree Strongly Disagree

14. The attitude of most entering first-year students at Maryland is that getting drunk is not okay.

Strongly Agree Agree Neutral Disagree Strongly Disagree

15. I expect to have a hard time adjusting to the academic work of college.

Strongly Agree Agree Neutral Disagree Strongly Disagree

16. I intend to join a Greek-membership (fraternity or sorority) organization.

Strongly Agree Agree Neutral Disagree Strongly Disagree

17. I would not consider seeking counseling for personal concerns.

Strongly Agree Agree Neutral Disagree Strongly Disagree

18. A prerequisite to effective leadership is having cross-cultural skills.

Strongly Agree Agree Neutral Disagree Strongly Disagree

19. I have the necessary knowledge to reach my academic goals next semester.

Strongly Agree Agree Neutral Disagree Strongly Disagree

20. My friends expect me to drink with them at parties.

Strongly Agree Agree Neutral Disagree Strongly Disagree

21. I'm not really thinking about my future now; it's still a long way off.

Strongly Agree Agree Neutral Disagree Strongly Disagree

22. I am satisfied with my life.

Strongly Agree Agree Neutral Disagree Strongly Disagree

23. I think it's better to have a firm set of beliefs than to be open minded.

Strongly Agree Agree Neutral Disagree Strongly Disagree

24. I would consider seeking counseling for drugs/alcohol while at Maryland.

Strongly Agree Agree Neutral Disagree Strongly Disagree

25. In order to be a more effective leader, I need to learn about my own culture.

Strongly Agree Agree Neutral Disagree Strongly Disagree

26. Chances are good that I will drop out of school temporarily before I complete a bachelor's degree.

Strongly Agree Agree Neutral Disagree Strongly Disagree

27. When I have a personal problem, I try to analyze the situation in order to understand it.

Strongly Agree Agree Neutral Disagree Strongly Disagree

28. My attitude is that getting drunk is not okay.

Strongly Agree Agree Neutral Disagree Strongly Disagree

29. So far I have gotten the important things I want in life.

Strongly Agree Agree Neutral Disagree Strongly Disagree

30. When I am with groups of people of different races, I am typically perceived to be the leader of the group.

Strongly Agree Agree Neutral Disagree Strongly Disagree

31. I prefer to deal with situations where I can rely on social norms and standards.

Strongly Agree Agree Neutral Disagree Strongly Disagree

32. I try not to think about or deal with problems as long as I can.

Strongly Agree Agree Neutral Disagree Strongly Disagree

33. When making important decisions, I like to have as much information as possible.

Strongly Agree Agree Neutral Disagree Strongly Disagree

34. I have the ability to reach my academic goals next semester.

Strongly Agree Agree Neutral Disagree Strongly Disagree

35. Most entering first-year Maryland students believe that the people who get drunk at least sometimes have the most social prestige.

Strongly Agree Agree Neutral Disagree Strongly Disagree

36. I've always had purpose in my life; I was brought up to know what to strive for.

Strongly Agree Agree Neutral Disagree Strongly Disagree

37. Regarding alcohol, my attitude is that drinking 5 or more drinks in one sitting is okay.

Strongly Agree Agree Neutral Disagree Strongly Disagree

38. I think sometimes getting drunk is fine.

Strongly Agree Agree Neutral Disagree Strongly Disagree

39. I expect to have a hard time adjusting to the social life in college.

Strongly Agree Agree Neutral Disagree Strongly Disagree

40. Most entering first-year students at Maryland think sometimes getting drunk is fine.

Strongly Agree Agree Neutral Disagree Strongly Disagree

41. My friends expect me to drink with them on weekdays.

Strongly Agree Agree Neutral Disagree Strongly Disagree

42. Regarding alcohol, the attitude of most Maryland entering first-year students is that drinking 5 or more drinks in one sitting is okay.

Strongly Agree Agree Neutral Disagree Strongly Disagree

43. I follow a vegetarian dietary lifestyle.

Strongly Agree Agree Neutral Disagree Strongly Disagree

44. I have what it takes to reach my academic goals next semester.

Strongly Agree Agree Neutral Disagree Strongly Disagree

45. In terms of frequency of drinking alcohol, I usually drink alcohol more often than my closest friends.

Strongly Agree Agree Neutral Disagree Strongly Disagree

46. In terms of quantity (amount) of alcohol I drink, I usually drink no more than my closest friends.

Strongly Agree Agree Neutral Disagree Strongly Disagree

47. My friends expect me to get drunk with them on weekends.

Strongly Agree Agree Neutral Disagree Strongly Disagree

48. My friends expect me to drink with them on weekends.

Strongly Agree Agree Neutral Disagree Strongly Disagree

49. When I have to make a decision, I try to wait as long as possible in order to see what will happen.

Strongly Agree Agree Neutral Disagree Strongly Disagree

50. If I could live my life over, I would change nothing.

Strongly Agree Agree Neutral Disagree Strongly Disagree

51. I do not expect to get a degree from the University of Maryland.

Strongly Agree Agree Neutral Disagree Strongly Disagree

52. I intend to get drunk sometime this coming semester.

Strongly Agree Agree Neutral Disagree Strongly Disagree

53. I've spent a lot of time and talked to a lot of people trying to develop a set of values that makes sense to me.

Strongly Agree Agree Neutral Disagree Strongly Disagree

54. I've spent a great deal of time thinking seriously about what I should do with my life.

Strongly Agree Agree Neutral Disagree Strongly Disagree

55. I am concerned about my ability to finance my college education.

Strongly Agree Agree Neutral Disagree Strongly Disagree

56. I think it's better to have fixed values than to consider alternative value systems.

Strongly Agree Agree Neutral Disagree Strongly Disagree

57. I feel comfortable being labeled the "leader" in a group setting.

Strongly Agree Agree Neutral Disagree Strongly Disagree

58. When it comes to alcohol, my drinking choices are entirely my own.

Strongly Agree Agree Neutral Disagree Strongly Disagree

59. This coming semester, I intend to drink no more than 4 alcoholic beverages in one sitting at any time.

Strongly Agree Agree Neutral Disagree Strongly Disagree

Items 60 - 65 refer to your decision to come to the University of Maryland. Using the 1-5 scale (Strongly Agree to Strongly Disagree), please indicate how likely you believe you would be to experience each of the following situations:

60. Have access to a "role model" in this school (i.e., someone you can look up to and learn from by observing).

Strongly Agree Agree Neutral Disagree Strongly Disagree

61. Feel support for this decision from important people in your life (e.g., teachers).

Strongly Agree Agree Neutral Disagree Strongly Disagree

62. Get helpful assistance from a tutor or mentor in this area, if you felt you needed such help.

Strongly Agree Agree Neutral Disagree Strongly Disagree

63. Get encouragement from your friends for coming to this school.

Strongly Agree Agree Neutral Disagree Strongly Disagree

64. Feel that your family members support this decision.

Strongly Agree Agree Neutral Disagree Strongly Disagree

65. Feel that close friends or relatives would be proud of you for making this decision.

Strongly Agree Agree Neutral Disagree Strongly Disagree

Multiple Choice Questions

66. Drinking 5 or more drinks in a single session is: (Choose the best option from the scale unenjoyable to enjoyable.)
1. Unenjoyable
 2. Somewhat unenjoyable
 3. Neither unenjoyable nor enjoyable
 4. Somewhat enjoyable
 5. Enjoyable
67. Drinking 5 or more drinks in a single session is: (Choose the best option from the scale favorable to unfavorable.)
1. Favorable
 2. Somewhat favorable
 3. Neither favorable nor unfavorable
 4. Somewhat unfavorable
 5. Unfavorable
68. Drinking 5 or more drinks in a single session is: (Choose the best option from the scale satisfying to unsatisfying.)
1. Satisfying
 2. Somewhat satisfying
 3. Neither satisfying nor unsatisfying
 4. Somewhat unsatisfying
 5. Unsatisfying

Please consider your own behavior to answer the next three (3) items:

69. Thinking specifically about the past 4 weeks or 28 days, on how many days, if any, did you have at least one drink of beer, wine, or liquor?
1. 1-2 days
 2. 3-4 days (once a week or less)
 3. 5-6 days
 4. 7-8 days (about 2 days a week)
 5. 9-10 days
 6. 11-12 days (about 3 days a week)
 7. 13-14 days
 8. 15-16 days (about 4 days a week)
 9. 17-18 days
 10. 19-20 days (about 5 days a week)
 11. 21-22 days
 12. 23-24 days (about 6 days a week)
 13. 25-26 days
 14. 27-28 days (about daily)
 15. 0 days in the past 28 days

70. Again, in the past 4 weeks or 28 days, on days when you drank alcohol how many drinks did you typically have?
1. 1 drink
 2. 2 drinks
 3. 3 drinks
 4. 4 drinks
 5. 5 drinks
 6. 6 drinks
 7. 7 drinks
 8. 8 drinks
 9. 9 drinks
 10. 10 drinks
 11. 11 drinks
 12. 12 drinks
 13. 13 drinks
 14. 14 drinks
 15. 15 drinks
 16. 16 drinks or more
 17. No drinks. I did not drink in that time period.
71. In the past two weeks (14 days), on how many days have you consumed 5 or more drinks in a 24-hour period? (Assume drinking past mid-night on any day to be part of that day rather than the next.)
1. On 1 day
 2. On 2 days
 3. On 3 days
 4. On 4 days
 5. On 5 days
 6. On 6 days
 7. On 7 days
 8. On 8 days
 9. On 9 days
 10. On 10 days
 11. On 11 days
 12. On 12 days
 13. On 13 days
 14. On 14 days
 15. On no days did I drink 5 or more drinks in a 24-hour period.

Please consider the behavior of most entering first year students at Maryland to answer the next three (3) items:

72. Thinking specifically about the past 4 weeks or 28 days, on how many days, if any, do you think most entering first year students have at least one drink of beer, wine, or liquor?

1. 1-2 days
2. 3-4 days (once a week or less)
3. 5-6 days
4. 7-8 days (about 2 days a week)
5. 9-10 days
6. 11-12 days (about 3 days a week)
7. 13-14 days
8. 15-16 days (about 4 days a week)
9. 17-18 days
10. 19-20 days (about 5 days a week)
11. 21-22 days
12. 23-24 days (about 6 days a week)
13. 25-26 days
14. 27-28 days (about daily)
15. 0 days in the past 28 days

73. Again, in the past 4 weeks or 28 days, on days when most entering first year students drank alcohol how many drinks do you think they typically had?

1. 1 drink
2. 2 drinks
3. 3 drinks
4. 4 drinks
5. 5 drinks
6. 6 drinks
7. 7 drinks
8. 8 drinks
9. 9 drinks
10. 10 drinks
11. 11 drinks
12. 12 drinks
13. 13 drinks
14. 14 drinks
15. 15 drinks
16. 16 drinks or more
17. None. Most did not drink in that time period.

74. In the past two weeks (14 days), on how many days do you think most Maryland entering first-year students consumed 5 or more drinks in a 24-hour period? (Assume drinking past mid-night on any day to be part of that day rather than the next.)
1. On 1 day
 2. On 2 days
 3. On 3 days
 4. On 4 days
 5. On 5 days
 6. On 6 days
 7. On 7 days
 8. On 8 days
 9. On 9 days
 10. On 10 days
 11. On 11 days
 12. On 12 days
 13. On 13 days
 14. On 14 days
 15. On no days did most drink 5 or more drinks in a 24-hour period.
75. What will be your work status this year?
1. Do not plan to work
 2. Will work in federally-funded work/study program
 3. Will do other on-campus work
 4. Will work off-campus
 5. Will work for academic credit as part of departmental program
 6. A combination of b-e
76. Which one of the following is most important to you in your long-term career choice?
1. Job openings usually available
 2. Rapid career advancement possible
 3. High anticipated earnings
 4. Well respected or prestigious occupation
 5. Great deal of independence
 6. Make an important contribution to society
 7. Avoid pressure
 8. Work with ideas
 9. Work with people
 10. Intrinsic interest in the field

77. If you leave school before receiving a degree, what would be the most likely cause?
1. Absolutely certain that I will obtain a degree
 2. To accept a good job
 3. To enter military service
 4. It would cost more than my family or I can afford
 5. Marriage
 6. Disinterest in study
 7. Lack of academic ability
 8. Insufficient reading or study skills
 9. Other
78. Which one of the following statements best describes your current status regarding a major:
- I HAVE
1. A major in mind and am sure that I will not change it.
 2. Decided on a major after considering several possibilities.
 3. A couple of general ideas of interest but have not decided on a major.
 4. Absolutely no idea what I would like to study/major in.
79. Ethnicity: Mark the NO box if not Spanish/Hispanic/Latino/Latina.
1. No, not Spanish/Hispanic/Latino/Latina
 2. Yes, Mexican, Mexican American, Chicano, Chicana
 3. Yes, Puerto Rican
 4. Yes, Cuban
 5. Yes, other Spanish/Hispanic/Latino/Latina
80. Race
- Select one or more:
1. White
 2. Black, African American, or Negro
 3. American Indian or Alaskan Native
 4. Asian Indian
 5. Chinese/Taiwanese
 6. Filipino
 7. Japanese
 8. Korean
 9. Vietnamese
 10. Native Hawaiian
 11. Guamanian or Chamorro
 12. Samoan
 13. Other Pacific Islander
 14. Other

81. Gender
1. male
 2. female
82. What is your religious preference?
1. Atheist
 2. Agnostic
 3. Buddhist
 4. Catholic
 5. Hindu
 6. Islamic
 7. Jewish
 8. Protestant (e.g. Baptist, Methodist, Presbyterian, etc.)
 9. Other
 10. No preference
83. Which one of the following best describes your disability?
1. I have none of the disabilities listed
 2. Deaf/Hard of Hearing
 3. Blind/Visually Impaired
 4. Learning Disabled
 5. Medical/Other
 6. Physical disability
 7. Attention Deficit Disorder
 8. Attention Deficit Hyperactivity Disorder
 9. Psychological
 10. Other
84. Please indicate your citizenship and/or generation status (choose one).
1. Your grandparents, parents and you were born in the U.S.
 2. Both of your parents and you were born in the U.S.
 3. You were born in the U.S., but one of your parents was not.
 4. You are a foreign born, naturalized citizen.
 5. You are a foreign born, resident alien/permanent resident.
 6. You are on a student visa.
85. What is the main reason you decided to go to college?
1. Get a better job
 2. Gain an education
 3. Next logical step after high school
 4. To learn critical thinking skills
 5. Prepare for graduate or professional school
 6. My parents expect it of me
 7. Other

86. When you entered this institution, it was your:
1. First choice
 2. Second choice
 3. Third choice or lower
87. Which option best describes your ranking in your high school graduating class?
1. Top 5%
 2. Top 10%
 3. Top 25%
 4. Upper half of class
 5. Lower half of class
88. Do you expect to send money home during your first year at UM?
YES NO
89. If yes: What proportion of what you earn/receive in financial aid will you send home?
1. Less than 25%
 2. 26-50%
 3. 51-75%
 4. 76-100%
 5. I do not receive financial aid.
90. What is the highest academic degree you intend to obtain?
1. Do not expect to complete a degree
 2. Associate's (AA or equivalent)
 3. Bachelor's (BA or BS)
 4. Master's (MA, MS, or MEd)
 5. Doctoral (PhD, EdD)
 6. Law (LLB, JD)
 7. Medical (MD, OD, DDS, or DVM)
 8. Divinity (BD or MDiv)
 9. Other
91. Please indicate which of the following describes your father's/guardian's education.
1. Less than high school diploma/GED
 2. High school diploma/GED
 3. Technical Certificate
 4. Associate's degree
 5. Bachelor's degree
 6. Master's degree
 7. PhD or professional degree (MD, JD, DVM, LLB, DDS, etc.)
 8. I don't know

92. Please indicate which of the following describes your mother's/guardian's education.
1. Less than high school diploma/GED
 2. High school diploma/GED
 3. Technical Certificate
 4. Associate's degree
 5. Bachelor's degree
 6. Master's degree
 7. PhD or professional degree (MD, JD, DVM, LLB, DDS, etc.)
 8. I don't know
93. What is your combined annual parental income?
1. Less than \$12,500
 2. \$12,500 - \$24,999
 3. \$25,000 - \$49,999
 4. \$50,000 - \$74,999
 5. \$75,000 - \$99,999
 6. \$100,000 - \$149,999
 7. \$150,000 - \$174,999
 8. \$175,000 and over
 9. I don't know
94. Where will you be living this semester?
1. Parent's or guardian's home
 2. Other relative's home
 3. University residence hall
 4. Fraternity or sorority house
 5. Renting an off-campus room or apartment alone
 6. Sharing a rented room or apartment
 7. Owning or renting a house alone
 8. Sharing a house
 9. Other

Please be sure to press **DONE** when finished to be sure your responses are saved!

Thank you for your time and participation!

If you have questions or comments regarding this survey, please contact Renee Snyder at rbsnyder@wam.umd.edu.

University New Student Census 2004

APPENDIX D

Maryland Social Life and Alcohol Use Experiences Consent Form

Please read protections below. These are protections you have as a participant in this study. Then **START** the survey process at the **BOTTOM** of this page. Note at bottom that this form is both a consent form (for 18 and older) and assent (17 years old) form.

PURPOSE: The purpose of this study is to understand better the experiences and ideas of students regarding some aspects of campus social life and alcohol use during the first year of college. We ask for your Directory ID so that the data can be linked to other data, including those from the University New Student Census and the campus data warehouse (e.g., providing us your residence hall, number of credits, ideas about social life before you entered college).

BENEFITS: Benefits include support of studies and reports designed both to improve University programs and services, and to improve our knowledge about college students generally. You may also indicate at the end of the survey that you would like to receive by email the results summary when the study is completed next spring.

PROCEDURES: Participation in this online survey will take about 10 to 15 minutes of your time. In order to record the data, you **MUST PRESS ?DONE?** at the end of the survey.

As you respond, be sure to check that your response button is darkened for each item you complete.

The survey questions relate to your social experiences and ideas as a student on campus and within your group of friends, including your attitudes and perceptions about alcohol on campus. Examples of survey items include: 1) Socially, I am a lot like the typical person in my group of friends. 2) Most undergraduate students at Maryland think that sometimes getting drunk is fine. And 3) In general, belonging to my group of friends is an important part of my self-image. Item formats are mostly strongly agree to strongly disagree scales. A few are multiple-choice. A final question allows you to tell the researcher anything you want about social life on campus.

CONFIDENTIALITY: Linking this survey data to other university data means that your responses are confidential but not anonymous. However, the researchers associated with this study are the only ones who will view your individual data, and they will not view it with your name attached. Confidentiality is maintained by giving survey results in GROUP form only. NO INDIVIDUAL IDENTITIES are revealed and no individual responses are ever reported. Your name will not be linked to reports or to the data. The data you provide here are NOT part of your student record.

RISKS: Risks to you as a participant are minimal. Information you share is being linked to your numeric University ID and may be linked to other university data sources as noted above. Your Directory ID, used to initiate the survey, never appears in the data.

FREEDOM TO WITHDRAW AND ASK QUESTIONS: Your participation is entirely voluntary. You may elect to participate now or not to participate, or you may complete any portion of the survey and stop at any time without penalty. Your participation in this survey will not affect services you receive on campus or your participation in campus programs.

CONTACT INFORMATION FOR INVESTIGATOR: You may contact Renee Snyder, investigator and coordinator for this study. Her email is rsnyder@wam.umd.edu. **INSTITUTIONAL REVIEW CONTACT:** If you have questions about your rights as a research subject please contact: Institutional Review Board, University of Maryland, College Park, Maryland 20742; (email) irb@deans.umd.edu; (phone) 301-405-4212.

INCENTIVES: STUDENTS ASKED and who complete this survey are eligible for over 92!! prize drawings: (1) \$250 Best Buy gift certificate; (1) \$250 IKEA gift certificate; (2) \$50 American Express Gift Check; (8) \$25 campus book store gift certificate; (10) 1 hour free billiards at Terp Zone in Union; and (20) Free passes for bowling in the Union; (50) Gift Certificate for California Burrito or Chipotle.

Students completing the survey BY 11:59 PM TUESDAY, NOVEMBER 16, will be eligible for TWO ENTRIES for opportunities to win those prizes. Students completing the survey before the final deadline will also be eligible to participate in another study this spring for which participation prizes and prize opportunities will be offered again.

CONSENT STATEMENT: By entering your Directory ID and password, you are confirming that you are 18 years or older and are giving us your informed consent to use your data in ways like those described above.

ASSENT STATEMENT: By entering your Directory ID, you are confirming that you are 17 years old and assenting (i.e., agreeing) to participate in this study and for us to use the data in ways described above.

TO START the secure survey process please PRESS DONE. The next page will require you to consent to the survey by entering your Directory ID and password if you choose to participate. Thank you for your time and honesty.

APPENDIX E

Maryland Social Life and Alcohol Use Experiences Quick Survey

Please take time to respond thoughtfully. Your honest responses are appreciated and confidential. **NO ITEMS ARE REPEATED**, even though they may look very similar. Please answer **EACH SEPARATELY**. Participants may request a summary of results after taking the survey. Thank you.

Please be sure that your response button is **DARKENED** when you select an answer or it will not record.

1. In general, belonging to my group of friends is an important part of my self-image.

Strongly Agree Agree Neutral Disagree Strongly Disagree

2. The attitude of **MOST FIRST-YEAR** students at Maryland is that getting drunk is **NOT** okay.

Strongly Agree Agree Neutral Disagree Strongly Disagree

3. My friends expect me to drink with them on weekdays.

Strongly Agree Agree Neutral Disagree Strongly Disagree

4. This semester I have been involved in events in my residence hall/living unit.

Strongly Agree Agree Neutral Disagree Strongly Disagree

5. I have attended fraternity or sorority activities/events this semester.

Strongly Agree Agree Neutral Disagree Strongly Disagree

6. Being a University of Maryland undergraduate student is important to me.

Strongly Agree Agree Neutral Disagree Strongly Disagree

7. This semester I have socialized frequently with my high school friends.

Strongly Agree Agree Neutral Disagree Strongly Disagree

8. I PLAN to go through Greek recruitment or rush next semester.

Strongly Agree Agree Neutral Disagree Strongly Disagree

9. MOST UNDERGRADUATE students at Maryland think sometimes getting drunk is fine.

Strongly Agree Agree Neutral Disagree Strongly Disagree

10. I take the opinions of my friends into account when I decide how much to drink.

Strongly Agree Agree Neutral Disagree Strongly Disagree

11. I feel involved in at least one club or organization on campus.

Strongly Agree Agree Neutral Disagree Strongly Disagree

12. The friends I spend the MOST time socializing with are of my SAME RACIAL-ETHNIC BACKGROUND.

Strongly Agree Agree Neutral Disagree Strongly Disagree

13. The friends I spend the MOST time socializing with are of my SAME GENDER.

Strongly Agree Agree Neutral Disagree Strongly Disagree

14. I consider myself a drinker.

Strongly Agree Agree Neutral Disagree Strongly Disagree

15. Socially, I am a lot like the TYPICAL person in my group of friends.

Strongly Agree Agree Neutral Disagree Strongly Disagree

16. In general, being an undergraduate student at Maryland is an important part of my self-image.

Strongly Agree Agree Neutral Disagree Strongly Disagree

17. I want to be seen as socially competent.

Strongly Agree Agree Neutral Disagree Strongly Disagree

18. This semester I have attended events in the Union.

Strongly Agree Agree Neutral Disagree Strongly Disagree

19. The attitude of MOST UNDERGRADUATE students at Maryland is that getting drunk is NOT okay.

Strongly Agree Agree Neutral Disagree Strongly Disagree

20. Being a Maryland undergraduate student is an important reflection of who I am.

Strongly Agree Agree Neutral Disagree Strongly Disagree

21. Having social prestige on campus is important to me.

Strongly Agree Agree Neutral Disagree Strongly Disagree

22. I keep in close contact with my parent(s) or guardian(s).

Strongly Agree Agree Neutral Disagree Strongly Disagree

23. My friends expect me to DRINK with them at parties.

Strongly Agree Agree Neutral Disagree Strongly Disagree

24. I take on a leadership role when I am with friends.

Strongly Agree Agree Neutral Disagree Strongly Disagree

25. I was a leader in high school.

Strongly Agree Agree Neutral Disagree Strongly Disagree

26. I serve a leadership role (e.g., committee chair, event coordinator, officer) in a campus organization.

Strongly Agree Agree Neutral Disagree Strongly Disagree

27. I usually volunteer to serve my community AT LEAST TWICE a year.

Strongly Agree Agree Neutral Disagree Strongly Disagree

28. I have attended Greek recruitment or rush events this term.

Strongly Agree Agree Neutral Disagree Strongly Disagree

29. When it comes to social life, I am similar to the TYPICAL person in my group of friends.

Strongly Agree Agree Neutral Disagree Strongly Disagree

30. MOST UNDERGRADUATES here believe that the people who get DRUNK AT LEAST SOMETIMES have the MOST social prestige.

Strongly Agree Agree Neutral Disagree Strongly Disagree

31. Whether or not I get drunk is ENTIRELY up to me.

Strongly Agree Agree Neutral Disagree Strongly Disagree

32. I intend to drink sometime next semester.

Strongly Agree Agree Neutral Disagree Strongly Disagree

33. Regarding alcohol, the attitude of MOST Maryland FIRST-YEAR students is that drinking 5 OR MORE drinks in one sitting is okay.

Strongly Agree Agree Neutral Disagree Strongly Disagree

34. The group of people I am friends with is an important reflection of who I am.

Strongly Agree Agree Neutral Disagree Strongly Disagree

35. My attitude is that getting drunk is NOT okay.

Strongly Agree Agree Neutral Disagree Strongly Disagree

36. I intend to join a Greek-membership organization (i.e., fraternity or sorority).

Strongly Agree Agree Neutral Disagree Strongly Disagree

37. Being a part of my group of friends is important to me.

Strongly Agree Agree Neutral Disagree Strongly Disagree

38. I consider myself a non-drinker.

Strongly Agree Agree Neutral Disagree Strongly Disagree

39. MOST FIRST-YEAR students at Maryland think sometimes getting drunk is fine.

Strongly Agree Agree Neutral Disagree Strongly Disagree

40. I intend to get DRUNK sometime next semester.

Strongly Agree Agree Neutral Disagree Strongly Disagree

41. I socialize mainly with other Maryland undergraduates.

Strongly Agree Agree Neutral Disagree Strongly Disagree

42. How MUCH I drink is NOT entirely up to me.

Strongly Agree Agree Neutral Disagree Strongly Disagree

43. My friends expect me to DRINK with them on weekends.

Strongly Agree Agree Neutral Disagree Strongly Disagree

44. When it comes to social life, I am similar to the TYPICAL Maryland UNDERGRADUATE.

Strongly Agree Agree Neutral Disagree Strongly Disagree

45. MOST Maryland undergraduate students believe that the people who DRINK AT LEAST SOMETIMES have the most social prestige.

Strongly Agree Agree Neutral Disagree Strongly Disagree

46. MOST Maryland undergraduate students believe that the people who GET DRUNK at least sometimes have the MOST social prestige.

Strongly Agree Agree Neutral Disagree Strongly Disagree

47. How OFTEN I drink alcohol is NOT entirely up to me.

Strongly Agree Agree Neutral Disagree Strongly Disagree

48. Regarding alcohol, my attitude is that drinking 5 OR MORE drinks in one sitting IS okay.

Strongly Agree Agree Neutral Disagree Strongly Disagree

49. I think sometimes getting drunk is fine.

Strongly Agree Agree Neutral Disagree Strongly Disagree

50. My friends expect me to get DRUNK with them on weekends.

Strongly Agree Agree Neutral Disagree Strongly Disagree

51. I drink alcohol about AS OFTEN AS the typical person in my group of FRIENDS.

Strongly Agree Agree Neutral Disagree Strongly Disagree

52. I drink about AS MUCH alcohol as the typical person in my group of FRIENDS.

Strongly Agree Agree Neutral Disagree Strongly Disagree

Feeling the questions are a tad repetitive? Don't be confused. They sound SO much the same, but they aren't when it comes to the research study. Just ignore those past ones and answer the ones ahead. You will be DONE with this section SOON! REALLY! (Thanks!)

53. My typical FEMALE friend drinks MORE than I do.

Strongly Agree Agree Neutral Disagree Strongly Disagree

54. My typical MALE friend drinks MORE than I do.

Strongly Agree Agree Neutral Disagree Strongly Disagree

55. MOST Maryland undergraduate students believe that the people who drink AT LEAST SOMETIMES are the most competent socially.

Strongly Agree Agree Neutral Disagree Strongly Disagree

56. When it comes to alcohol, my drinking choices are ENTIRELY my own.

Strongly Agree Agree Neutral Disagree Strongly Disagree

57. I intend to drink MORE THAN 4 alcoholic beverages in a 24-hour period sometime next semester.

Strongly Agree Agree Neutral Disagree Strongly Disagree

58. I enjoy being unique and different from others in many respects.

Strongly Agree Agree Neutral Disagree Strongly Disagree

59. I feel I have little personal control over my drinking alcohol.

Strongly Agree Agree Neutral Disagree Strongly Disagree

60. Socially, I am a lot like the typical undergraduate at Maryland.

Strongly Agree Agree Neutral Disagree Strongly Disagree

61. Alcohol is usually available in locations where I socialize.

Strongly Agree Agree Neutral Disagree Strongly Disagree

62. I will stay with a group if they need me, even when I'm not happy with the group.

Strongly Agree Agree Neutral Disagree Strongly Disagree

63. Regarding alcohol, the attitude of MOST undergraduate Maryland students is that drinking 5 OR MORE drinks in one sitting IS okay.

Strongly Agree Agree Neutral Disagree Strongly Disagree

64. Friends seek me out for advice.

Strongly Agree Agree Neutral Disagree Strongly Disagree

65. How OFTEN I get drunk is entirely up to me.

Strongly Agree Agree Neutral Disagree Strongly Disagree

66. I drink about AS MUCH alcohol as the typical Maryland undergraduate.

Strongly Agree Agree Neutral Disagree Strongly Disagree

67. My friends and I tend to socialize mostly with one another rather than with lots of other people.

Strongly Agree Agree Neutral Disagree Strongly Disagree

68. I am concerned about the drinking patterns of a friend at Maryland.

Strongly Agree Agree Neutral Disagree Strongly Disagree

69. My friends seem to follow my ideas pretty easily.

Strongly Agree Agree Neutral Disagree Strongly Disagree

70. I drink alcohol about AS OFTEN AS the typical Maryland undergraduate.

Strongly Agree Agree Neutral Disagree Strongly Disagree

71. Next semester I intend to drink NO MORE THAN 4 alcoholic beverages in one sitting at any time.

Strongly Agree Agree Neutral Disagree Strongly Disagree

72. When asked about MY GROUP OF FRIENDS, I tend to think mostly of my high school friends.

Strongly Agree Agree Neutral Disagree Strongly Disagree

73. I think campus policies related to student drinking are enforced strongly enough.

Strongly Agree Agree Neutral Disagree Strongly Disagree

The next 9 items are in sets of three. The same three items ask about you, most undergraduates at Maryland, and most first-year students. For the first set of 3 items, please respond regarding YOUR OWN drinking choices.

74. Thinking specifically about the PAST FOUR WEEKS (28 days), on HOW MANY DAYS, IF ANY, did you have AT LEAST ONE drink of beer, wine or liquor?

1. 1-2 days
2. 3-4 days (once a week or less)
3. 5-6 days
4. 7-8 days (about 2 days a week)
5. 9-10 days
6. 11-12 days (about 3 days a week)
7. 13-14 days
8. 15-16 days (about 4 days a week)
9. 17-18 days
10. 19-20 days (about 5 days a week)
11. 21-22 days
12. 23-24 days (about 6 days a week)
13. 25-26 days
14. 27-28 days (about daily)
15. On no (0) days in the past 28

75. Again, in the PAST FOUR WEEKS (28 days), ON DAYS when you drank alcohol HOW MANY DRINKS did you typically have?

1. 1 drink
2. 2 drinks
3. 3 drinks
4. 4 drinks
5. 5 drinks
6. 6 drinks
7. 7 drinks
8. 8 drinks
9. 9 drinks
10. 10 drinks
11. 11 drinks
12. 12 drinks
13. 13 drinks
14. 14 drinks
15. 15 drinks
16. 16 or more drinks
17. No drinks. I did not drink in that time period.

76. In the past TWO weeks (14 days), on HOW MANY DAYS have you consumed 5 OR MORE drinks in a 24-hour period? (Assume drinking past midnight on any day to be part of that day rather than the next).

1. On 1 day
2. On 2 days
3. On 3 days
4. On 4 days
5. On 5 days
6. On 6 days
7. On 7 days
8. On 8 days
9. On 9 days
10. On 10 days
11. On 11 days
12. On 12 days
13. On 13 days
14. On 14 days
15. On NO days did I drink 5 OR MORE drinks in a 24-hour period.

For the next three items, please consider the behavior of MOST OTHER UNDERGRADUATE students at Maryland.

77. Thinking specifically about the PAST FOUR WEEKS (28 days), on HOW MANY DAYS, if any do you think MOST other Maryland undergraduate students have had AT LEAST ONE drink of beer, wine, or liquor.

1. 1-2 days
2. 3-4 days (once a week or less)
3. 5-6 days
4. 7-8 days (about 2 days a week)
5. 9-10 days
6. 11-12 days (about 3 days a week)
7. 13-14 days
8. 15-16 days (about 4 days a week)
9. 17-18 days
10. 19-20 days (about 5 days a week)
11. 21-22 days
12. 23-24 days (about 6 days a week)
13. 25-26 days
14. 27-28 days (about daily)
15. On NO (0) days in the past 28

78. Again, in the PAST FOUR WEEKS (28 days), ON DAYS when MOST other Maryland undergraduate students drank alcohol, HOW MANY DRINKS do you think they typically had?

1. 1 drink
2. 2 drinks
3. 3 drinks
4. 4 drinks
5. 5 drinks
6. 6 drinks
7. 7 drinks
8. 8 drinks
9. 9 drinks
10. 10 drinks
11. 11 drinks
12. 12 drinks
13. 13 drinks
14. 14 drinks
15. 15 drinks
16. 16 or more drinks
17. None. Most did NOT drink during that time period.

79. In the past TWO weeks (14 days), on HOW MANY DAYS do you think MOST Maryland undergraduate students consumed 5 OR MORE drinks in a 24-hour period? (Assume drinking past midnight on any day to be part of that day rather than the next).

1. On 1 day
2. On 2 days
3. On 3 days
4. On 4 days
5. On 5 days
6. On 6 days
7. On 7 days
8. on 8 days
9. On 9 days
10. On 10 days
11. On 11 days
12. On 12 days
13. On 13 days
14. On 14 days
15. On no days did most drink 5 OR MORE drinks in a 24-hour period.

Please consider MOST FIRST YEAR students as you respond to the final set of these questions.

80. Thinking specifically about the PAST FOUR WEEKS (28 days), on HOW MANY DAYS, if any, do you think MOST FIRST-YEAR STUDENTS have AT LEAST ONE drink of beer, one or liquor?

1. 1-2 days
2. 3-4 days (once a week or less)
3. 5-6 days
4. 7-8 days (about 2 days a week)
5. 9-10 days
6. 11-12 days (about 3 days a week)
7. 13-14 days
8. 15-16 days (about 4 days a week)
9. 17-18 days
10. 19-20 days (about 5 days a week)
11. 21-22 days
12. 23-24 days (about 6 days a week)
13. 25-26 days
14. 27-28 days (about daily)
15. On no (0) days in the past 28 days

81. Again, in the PAST FOUR WEEKS (28 days), on days when MOST FIRST YEAR students drank alcohol HOW MANY DRINKS do you think they typically had?

1. 1 drink
2. 2 drinks
3. 3 drinks
4. 4 drinks
5. 5 drinks
6. 6 drinks
7. 7 drinks
8. 8 drinks
9. 9 drinks
10. 10 drinks
11. 11 drinks
12. 12 drinks
13. 13 drinks
14. 14 drinks
15. 15 drinks
16. 16 drinks or more
17. None. MOST did not drink in that time.

82. In the past TWO weeks (14 days) on HOW MANY DAYS do you think MOST FIRST YEAR students consumed 5 OR MORE drinks in a 24-hour period.

(Assume drinking past mid-night on any day to be a part of that day rather than the next.)

1. On 1 day
2. On 2 days
3. On 3 days
4. On 4 days
5. On 5 days
6. On 6 days
7. On 7 days
8. On 8 days
9. On 9 days
10. On 10 days
11. On 11 days
12. On 12 days
13. On 13 days
14. On 14 days
15. On NO days did MOST drink 5 OR MORE in a 24-hour period.

Just a few more questions. Remember! PRESS DONE to record your responses and your entries for prizes.

83. I have been offered membership in at least one fraternity or sorority.

YES NO

84. Drinking 5 OR MORE drinks in a single session is:

1. Unenjoyable
2. Somewhat unenjoyable
3. Neither unenjoyable nor enjoyable
4. Somewhat enjoyable
5. Enjoyable

85. Drinking 5 OR MORE drinks in a single session is:

1. Favorable
2. Somewhat favorable
3. Neither favorable nor unfavorable
4. Somewhat unfavorable
5. Unfavorable

86. Drinking 5 OR MORE drinks in a single session is:
1. Satisfying
 2. Somewhat satisfying
 3. Neither satisfying nor unsatisfying
 4. Somewhat unsatisfying
 5. Unsatisfying
87. I intend to drink 5 OR MORE alcoholic drinks in a single session in the next 4 weeks.
1. Extremely likely I will
 2. Likely I will
 3. Uncertain if I will
 4. Unlikely that I will
 5. Extremely unlikely that I will
88. I do/do not intend to drink 5 OR MORE alcoholic drinks in a single session in the next 4 weeks.
1. Do intend
 2. Might
 3. Uncertain
 4. Might not
 5. Do not intend
89. MOST students here think that the students with the MOST SOCIAL PRESTIGE are:
1. Non-drinkers
 2. People who drink but not enough to get drunk
 3. People who get drunk sometimes but not enough to let it interfere with school and other responsibilities
 4. People who get drunk sometimes even if it does interfere with school or other responsibilities
 5. People who get drunk frequently if that is what they choose to do
90. I tend to socialize mostly:
1. With a few close friends on campus in the residence halls.
 2. At fraternity or sorority events.
 3. At small campus events with no more than about 50 people.
 4. At large campus events with more than 50 people.
 5. Off-campus with a few close friends in their houses/apartments
 6. At off-campus social events of not more than about 50 people
 7. At off-campus restaurants/bars

91. Race-Ethnicity: (Select AS MANY as apply for you.)

1. African American or Black
2. Asian American
3. Hispanic/Latino/Latina
4. Native American
5. White/Caucasian
6. Other Races/Ethnicities Not Listed

The last three items ask what prize incentives you suggest for next term, whether you would like to receive a copy of the results, and what you would like to tell this researcher about social life at Maryland. Please be certain to scroll to the **BOTTOM OF THE PAGE** and **PRESS DONE TO RECORD YOUR RESPONSES AND ENTRY.**

92. What would you like to tell this researcher about campus social life at Maryland? (Please limit your response to about 50 words.)

93. I would like to receive a summary of the survey results via my email address when they are available mid-spring.
YES NO

94. The following incentive/s would most motivate me to help you out with your spring survey:

1. Free food for all responders
2. Free food for the first 500 and cool prizes like you have already
3. Smaller cash prizes for more people (\$25 for 10 people, for instance)
4. Airline vouchers/tickets for one or two people
5. One really big prize (like a chance at \$500 American Express gift checks) and food for the first 500

NOW you can **PRESS DONE**. Information on prize notification is on the next page. Thank you so much for your assistance!

APPENDIX F

Thank You For Your Participation!

Thank you for your participation in this study! I will contact you again in the spring with a follow-up survey. Your perspective is important.

Prizewinners will be notified by December 8. If you are a prizewinner, your prize will be sent to the address on record with the University. Please make sure it is up-to-date.

CONCERNED ABOUT SOMEONE YOU KNOW?

Highlighted below are campus referral sources and phone numbers for appointments should you be concerned about alcohol use, social adjustment, or general well being for yourself, a friend, or someone else you may know. You may also seek advice directly from these staff members about how to assist a friend who will not seek counseling.

Professionals in these departments are available to students either free of charge or for a nominal fee.

Counseling Center (free) 301-314-7651

Mental Health Unit (nominal charge)

University of Maryland Health Center

301-314-8106

APPENDIX G

Maryland Social Life and Alcohol Use Experiences Follow-Up Survey Consent Form

Please read protections below. These are protections you have as a participant in this study. Then **START** the survey process at the **BOTTOM** of this page. Note at bottom that this form is both a consent form (for 18 and older) and assent (17 years old) form.

PURPOSE: The purpose of this study is to understand better the experiences and ideas of students regarding some aspects of campus social life and alcohol use during the first year of college. We ask for your Directory ID so that the data can be linked to other data, including those from the University New Student Census and the campus data warehouse (e.g., providing us your residence hall, number of credits, ideas about social life before you entered college).

BENEFITS: Benefits include support of studies and reports designed both to improve University programs and services, and to improve our knowledge about college students generally. You may also indicate at the end of the survey that you would like to receive by email the results summary when the study is completed next spring.

PROCEDURES: Participation in this online survey will take about 5-7 minutes of your time. In order to record the data, you **MUST PRESS ?DONE?** at the end of the survey.

As you respond, be sure to check that your response button is darkened for each item you complete.

The survey questions relate to your social experiences and ideas as a student on campus and within your group of friends, including your attitudes and perceptions about alcohol on campus. Examples of survey items include: 1) Socially, I am a lot like the typical person in my group of friends. 2) Most undergraduate students at Maryland think that sometimes getting drunk is fine. And 3) In general, belonging to my group of friends is an important part of my self-image. Item formats are mostly strongly agree to strongly disagree scales. A few are multiple-choice. A final question allows you to tell the researcher anything you want about social life on campus.

CONFIDENTIALITY: Linking this survey data to other university data means that your responses are confidential but not anonymous.

However, the researchers associated with this study are the only ones who will view your individual data, and they will not view it with your name attached. Confidentiality is maintained by giving survey results in GROUP form only. NO INDIVIDUAL IDENTITIES are revealed and no individual responses are ever reported. Your name will not be linked to reports or to the data. The data you provide here are NOT part of your student record.

RISKS: Risks to you as a participant are minimal. Information you share is being linked to your numeric University ID and may be linked to other university data sources as noted above. Your Directory ID, used to initiate the survey, never appears in the data.

FREEDOM TO WITHDRAW AND ASK QUESTIONS: Your participation is entirely voluntary. You may elect to participate now or not to participate, or you may complete any portion of the survey and stop at any time without penalty. Your participation in this survey will not affect services you receive on campus or your participation in campus programs.

CONTACT INFORMATION FOR INVESTIGATOR: You may contact Renee Snyder, investigator and coordinator for this study. Her email is rbsnyder@wam.umd.edu. **INSTITUTIONAL REVIEW CONTACT:** If you have questions about your rights as a research subject please contact: Institutional Review Board, University of Maryland, College Park, Maryland 20742; (email) irb@deans.umd.edu; (phone) 301-405-4212.

INCENTIVES: Participants who complete the survey will be eligible for prizes (e.g., entry for Hoff Theater ticket, book store gift certificates, etc.) as outlined in their solicitation email from the researcher.

CONSENT STATEMENT: By entering your Directory ID and password, you are confirming that you are 18 years or older and are giving us your informed consent to use your data in ways like those described above.

ASSENT STATEMENT: By entering your Directory ID and password, you are confirming that you are 17 years old and assenting (i.e., agreeing) to participate in this study and for us to use the data in ways described above.

TO START the secure survey process please PRESS DONE. The next page will require you to consent to the survey by entering your Directory ID and password if you choose to participate. Thank you for your time and honesty.

APPENDIX H

**Maryland Social Life and Alcohol Use Experiences
Follow-Up Survey**

Please take time to respond thoughtfully. Your honest responses are appreciated and confidential. NO ITEMS ARE REPEATED, even though they may look very similar. Please answer EACH SEPARATELY. Participants may request a summary of results after taking the survey. Thank you.

EVEN IF YOU DO NOT DRINK, please respond to each item. They are designed to accommodate non-drinker responses as well. Just consider them from your own frame of reference.

Please be sure that your response button is DARKENED when you select an answer or it will not record.

1. In general, belonging to my group of friends is an important part of my self-image.

Strongly Agree Agree Neutral Disagree Strongly Disagree

2. My friends expect me to drink with them on weekdays.

Strongly Agree Agree Neutral Disagree Strongly Disagree

3. This semester I have been involved in events in my residence hall/living unit.

Strongly Agree Agree Neutral Disagree Strongly Disagree

4. This semester I have attended events in the Union.

Strongly Agree Agree Neutral Disagree Strongly Disagree

5. Being a University of Maryland undergraduate student is important to me.

Strongly Agree Agree Neutral Disagree Strongly Disagree

6. This semester I have socialized frequently with my high school friends.

Strongly Agree Agree Neutral Disagree Strongly Disagree

7. MOST UNDERGRADUATE students at Maryland think sometimes getting drunk is fine.

Strongly Agree Agree Neutral Disagree Strongly Disagree

8. I take the opinions of my friends into account when I decide how much to drink.

Strongly Agree Agree Neutral Disagree Strongly Disagree

9. I feel involved in at least one club or organization on campus.

Strongly Agree Agree Neutral Disagree Strongly Disagree

10. I have attended Greek rush or recruitment events this semester.

Strongly Agree Agree Neutral Disagree Strongly Disagree

11. The friends I spend the MOST time socializing with are of my SAME RACIAL-ETHNIC BACKGROUND.

Strongly Agree Agree Neutral Disagree Strongly Disagree

12. The friends I spend the MOST time socializing with are of my SAME GENDER.

Strongly Agree Agree Neutral Disagree Strongly Disagree

13. I consider myself a drinker.

Strongly Agree Agree Neutral Disagree Strongly Disagree

14. Socially, I am a lot like the TYPICAL person in my group of friends.

Strongly Agree Agree Neutral Disagree Strongly Disagree

15. In general, being an undergraduate student at Maryland is an important part of my self-image.

Strongly Agree Agree Neutral Disagree Strongly Disagree

16. I want to be seen as socially competent.

Strongly Agree Agree Neutral Disagree Strongly Disagree

17. The attitude of MOST UNDERGRADUATE students at Maryland is that getting drunk is NOT okay.

Strongly Agree Agree Neutral Disagree Strongly Disagree

18. Being a Maryland undergraduate student is an important reflection of who I am.

Strongly Agree Agree Neutral Disagree Strongly Disagree

19. Having social prestige on campus is important to me.

Strongly Agree Agree Neutral Disagree Strongly Disagree

20. I keep in close contact with my parent(s) or guardian(s).

Strongly Agree Agree Neutral Disagree Strongly Disagree

21. My friends expect me to DRINK with them at parties.

Strongly Agree Agree Neutral Disagree Strongly Disagree

22. I take on a leadership role when I am with friends.

Strongly Agree Agree Neutral Disagree Strongly Disagree

23. I serve a leadership role (e.g., committee chair, event coordinator, officer) in a campus organization.

Strongly Agree Agree Neutral Disagree Strongly Disagree

24. When it comes to social life, I am similar to the TYPICAL person in my group of friends.

Strongly Agree Agree Neutral Disagree Strongly Disagree

25. MOST Maryland undergraduate students believe that the students here who DRINK at least sometimes have the MOST social prestige.

Strongly Agree Agree Neutral Disagree Strongly Disagree

26. Whether or not I get drunk is ENTIRELY up to me.

Strongly Agree Agree Neutral Disagree Strongly Disagree

27. The group of people I am friends with is an important reflection of who I am.

Strongly Agree Agree Neutral Disagree Strongly Disagree

28. My attitude is that getting drunk is NOT okay.

Strongly Agree Agree Neutral Disagree Strongly Disagree

29. Being a part of my group of friends is important to me.

Strongly Agree Agree Neutral Disagree Strongly Disagree

30. I consider myself a non-drinker.

Strongly Agree Agree Neutral Disagree Strongly Disagree

31. I socialize mainly with other Maryland undergraduates.

Strongly Agree Agree Neutral Disagree Strongly Disagree

32. How MUCH I drink is NOT entirely up to me.

Strongly Agree Agree Neutral Disagree Strongly Disagree

33. My friends expect me to DRINK with them on weekends.

Strongly Agree Agree Neutral Disagree Strongly Disagree

34. When it comes to social life, I am similar to the TYPICAL Maryland UNDERGRADUATE.

Strongly Agree Agree Neutral Disagree Strongly Disagree

35. MOST Maryland undergraduate students believe that the students here who GET DRUNK at least sometimes have the MOST social prestige.

Strongly Agree Agree Neutral Disagree Strongly Disagree

36. How OFTEN I drink alcohol is NOT entirely up to me.

Strongly Agree Agree Neutral Disagree Strongly Disagree

37. Regarding alcohol, my attitude is that drinking 5 OR MORE drinks in one sitting IS okay.

Strongly Agree Agree Neutral Disagree Strongly Disagree

38. I think sometimes getting drunk is fine.

Strongly Agree Agree Neutral Disagree Strongly Disagree

39. Developing a higher physical tolerance for consuming more alcohol is a risk factor for developing alcoholism.

Strongly Agree Agree Neutral Disagree Strongly Disagree

40. My friends expect me to get DRUNK with them on weekends.

Strongly Agree Agree Neutral Disagree Strongly Disagree

41. I drink alcohol about AS OFTEN AS the typical person in my group of FRIENDS.

Strongly Agree Agree Neutral Disagree Strongly Disagree

42. I drink about AS MUCH alcohol as the typical person in my group of FRIENDS.

Strongly Agree Agree Neutral Disagree Strongly Disagree

43. I drink to get drunk.

Strongly Agree Agree Neutral Disagree Strongly Disagree

Recall from the survey last time, questions may sound SO much the same, but they aren't when it comes to the research study. Just ignore those past ones and answer the ones ahead. You will be DONE with this section SOON! REALLY! (Thanks--again!)

44. My typical FEMALE friend drinks MORE than I do.

Strongly Agree Agree Neutral Disagree Strongly Disagree

45. My typical MALE friend drinks MORE than I do.

Strongly Agree Agree Neutral Disagree Strongly Disagree

46. MOST Maryland undergraduate students believe that the students here who DRINK at least sometimes are the MOST COMPETENT SOCIALLY.

Strongly Agree Agree Neutral Disagree Strongly Disagree

47. When it comes to alcohol, my drinking choices are ENTIRELY my own.

Strongly Agree Agree Neutral Disagree Strongly Disagree

48. I enjoy being unique and different from others in many respects.

Strongly Agree Agree Neutral Disagree Strongly Disagree

49. I feel I have little personal control over my drinking alcohol.

Strongly Agree Agree Neutral Disagree Strongly Disagree

50. Socially, I am a lot like the typical undergraduate at Maryland.

Strongly Agree Agree Neutral Disagree Strongly Disagree

51. Alcohol is usually available in locations where I socialize.

Strongly Agree Agree Neutral Disagree Strongly Disagree

52. Choosing to drink AS LITTLE alcohol as I want IS in my control.

Strongly Agree Agree Neutral Disagree Strongly Disagree

53. I will stay with a group if they need me, even when I'm not happy with the group.

Strongly Agree Agree Neutral Disagree Strongly Disagree

54. Regarding alcohol, the attitude of MOST undergraduate Maryland students is that drinking 5 OR MORE drinks in one sitting IS okay.

Strongly Agree Agree Neutral Disagree Strongly Disagree

55. How OFTEN I get drunk is entirely up to me.

Strongly Agree Agree Neutral Disagree Strongly Disagree

56. Friends seek me out for advice.

Strongly Agree Agree Neutral Disagree Strongly Disagree

57. I drink about AS MUCH alcohol as the typical Maryland undergraduate.

Strongly Agree Agree Neutral Disagree Strongly Disagree

58. I drink alcohol about AS OFTEN AS the typical Maryland undergraduate.

Strongly Agree Agree Neutral Disagree Strongly Disagree

59. My friends and I tend to socialize mostly with one another rather than with lots of other people.

Strongly Agree Agree Neutral Disagree Strongly Disagree

60. I am concerned about the drinking patterns of a friend at Maryland.

Strongly Agree Agree Neutral Disagree Strongly Disagree

61. My friends seem to follow my ideas pretty easily.

Strongly Agree Agree Neutral Disagree Strongly Disagree

62. When asked about MY GROUP OF FRIENDS, I tend to think mostly of my high school friends.

Strongly Agree Agree Neutral Disagree Strongly Disagree

63. I think campus policies related to student drinking are enforced strongly enough.

Strongly Agree Agree Neutral Disagree Strongly Disagree

The next 9 items are in sets of three. The same three items ask about you, most undergraduates at Maryland, and most first-year students. For the **FIRST SET OF THREE ITEMS**, please respond regarding **YOUR OWN** drinking choices.

64. Thinking specifically about the **PAST FOUR WEEKS (28 days)**, on **HOW MANY DAYS, IF ANY**, did you have **AT LEAST ONE** drink of beer, wine or liquor?
1. 1-2 days
 2. 3-4 days (once a week or less)
 3. 5-6 days
 4. 7-8 days (about 2 days a week)
 5. 9-10 days
 6. 11-12 days (about 3 days a week)
 7. 13-14 days
 8. 15-16 days (about 4 days a week)
 9. 17-18 days
 10. 19-20 days (about 5 days a week)
 11. 21-22 days
 12. 23-24 days (about 6 days a week)
 13. 25-26 days
 14. 27-28 days (about daily)
 15. On no (0) days in the past 28
65. Again, in the **PAST FOUR WEEKS (28 days)**, **ON DAYS** when you drank alcohol **HOW MANY DRINKS** did you typically have?
1. 1 drink
 2. 2 drinks
 3. 3 drinks
 4. 4 drinks
 5. 5 drinks
 6. 6 drinks
 7. 7 drinks
 8. 8 drinks
 9. 9 drinks
 10. 10 drinks
 11. 11 drinks
 12. 12 drinks
 13. 13 drinks
 14. 14 drinks
 15. 15 drinks
 16. 16 or more drinks
 17. No drinks. I did not drink in that time period.

66. In the past TWO weeks (14 days), on HOW MANY DAYS have you consumed 5 OR MORE drinks in a 24-hour period? (Assume drinking past midnight on any day to be part of that day rather than the next).
1. On 1 day
 2. On 2 days
 3. On 3 days
 4. On 4 days
 5. On 5 days
 6. On 6 days
 7. On 7 days
 8. On 8 days
 9. On 9 days
 10. On 10 days
 11. On 11 days
 12. On 12 days
 13. On 13 days
 14. On 14 days
 15. On NO days did I drink 5 OR MORE drinks in a 24-hour period.

For the NEXT THREE items, please consider the behavior of MOST OTHER UNDERGRADUATE students at Maryland.

67. Thinking specifically about the PAST FOUR WEEKS (28 days), on HOW MANY DAYS, if any, do you think MOST other Maryland undergraduate students have had AT LEAST ONE drink of beer, wine, or liquor.
1. 1-2 days
 2. 3-4 days (once a week or less)
 3. 5-6 days
 4. 7-8 days (about 2 days a week)
 5. 9-10 days
 6. 11-12 days (about 3 days a week)
 7. 13-14 days
 8. 15-16 days (about 4 days a week)
 9. 17-18 days
 10. 19-20 days (about 5 days a week)
 11. 21-22 days
 12. 23-24 days (about 6 days a week)
 13. 25-26 days
 14. 27-28 days (about daily)
 15. On NO (0) days in the past 28

68. Again, in the PAST FOUR WEEKS (28 days), ON DAYS when MOST other Maryland undergraduate students drank alcohol, HOW MANY DRINKS do you think they typically had?

1. 1 drink
2. 2 drinks
3. 3 drinks
4. 4 drinks
5. 5 drinks
6. 6 drinks
7. 7 drinks
8. 8 drinks
9. 9 drinks
10. 10 drinks
11. 11 drinks
12. 12 drinks
13. 13 drinks
14. 14 drinks
15. 15 drinks
16. 16 or more drinks
17. None. Most did NOT drink during that time period.

69. In the past TWO weeks (14 days), on HOW MANY DAYS do you think MOST Maryland undergraduate students consumed 5 OR MORE drinks in a 24-hour period? (Assume drinking past midnight on any day to be part of that day rather than the next).

1. On 1 day
2. On 2 days
3. On 3 days
4. On 4 days
5. On 5 days
6. On 6 days
7. On 7 days
8. on 8 days
9. On 9 days
10. On 10 days
11. On 11 days
12. On 12 days
13. On 13 days
14. On 14 days
15. On no days did most drink 5 OR MORE drinks in a 24-hour period.

Please consider MOST FIRST YEAR students as you respond to the FINAL SET of these questions.

70. Thinking specifically about the PAST FOUR WEEKS (28 days), on HOW MANY DAYS, if any, do you think MOST FIRST-YEAR STUDENTS have AT LEAST ONE drink of beer, wine or liquor?

1. 1-2 days
2. 3-4 days (once a week or less)
3. 5-6 days
4. 7-8 days (about 2 days a week)
5. 9-10 days
6. 11-12 days (about 3 days a week)
7. 13-14 days
8. 15-16 days (about 4 days a week)
9. 17-18 days
10. 19-20 days (about 5 days a week)
11. 21-22 days
12. 23-24 days (about 6 days a week)
13. 25-26 days
14. 27-28 days (about daily)
15. On no (0) days in the past 28

71. Again, in the PAST FOUR WEEKS (28 days), on days when MOST FIRST YEAR students drank alcohol HOW MANY DRINKS do you think they typically had?

1. 1 drink
2. 2 drinks
3. 3 drinks
4. 4 drinks
5. 5 drinks
6. 6 drinks
7. 7 drinks
8. 8 drinks
9. 9 drinks
10. 10 drinks
11. 11 drinks
12. 12 drinks
13. 13 drinks
14. 14 drinks
15. 15 drinks
16. 16 drinks or more
17. None. MOST did not drink in that time.

72. In the past TWO weeks (14 days) on HOW MANY DAYS do you think MOST FIRST YEAR students consumed 5 OR MORE drinks in a 24-hour period. (Assume drinking past mid-night on any day to be a part of that day rather than the next.)
1. On 1 day
 2. On 2 days
 3. On 3 days
 4. On 4 days
 5. On 5 days
 6. On 6 days
 7. On 7 days
 8. On 8 days
 9. On 9 days
 10. On 10 days
 11. On 11 days
 12. On 12 days
 13. On 13 days
 14. On 14 days
 15. On NO days did MOST drink 5 OR MORE in a 24-hour period.

Just a few more questions. Remember! PRESS DONE to record your responses and your entries for prizes.

73. I have been offered membership in at least one fraternity or sorority.
YES NO
74. I have joined a fraternity or sorority.
YES NO
75. The fraternity or sorority I have joined is part of the following council:
1. I am not in a fraternity or sorority.
 2. Interfraternity Council (IFC) (North-American Interfraternity Conference--NIC)
 3. Panhellenic Association (PHA) (National Panhellenic Conference -- NPC)
 4. Pan-Hellenic Council (PHC)
 5. United Greek Council (UGC)
 6. I do not know.

76. Drinking 5 OR MORE drinks in a single session is:
1. Unenjoyable
 2. Somewhat unenjoyable
 3. Neither unenjoyable nor enjoyable
 4. Somewhat enjoyable
 5. Enjoyable
77. Drinking 5 OR MORE drinks in a single session is:
1. Favorable
 2. Somewhat favorable
 3. Neither favorable nor unfavorable
 4. Somewhat unfavorable
 5. Unfavorable
78. Drinking 5 OR MORE drinks in a single session is:
1. Satisfying
 2. Somewhat satisfying
 3. Neither satisfying nor unsatisfying
 4. Somewhat unsatisfying
 5. Unsatisfying
79. I intend to drink 5 OR MORE alcoholic drinks in a single session in the next 4 weeks.
1. Extremely likely I will
 2. Likely I will
 3. Uncertain if I will
 4. Unlikely that I will
 5. Extremely unlikely that I will
80. I do/do not intend to drink 5 OR MORE alcoholic drinks in a single session in the next 4 weeks.
1. Do intend
 2. Might
 3. Uncertain
 4. Might not
 5. Do not intend

81. MOST students here think that the students with the MOST SOCIAL PRESTIGE are:

1. Non-drinkers
2. People who drink but not enough to get drunk
3. People who get drunk sometimes but not enough to let it interfere with school and other responsibilities
4. People who get drunk sometimes even if it does interfere with school or other responsibilities
5. People who get drunk frequently if that is what they choose to do

82. I tend to socialize mostly:

1. With a few close friends on campus in the residence halls.
2. At fraternity or sorority events.
3. At small campus events with NOT more than about 50 people.
4. At large campus events with more than 50 people.
5. Off-campus with a few close friends in their houses/apartments
6. At off-campus social events of NOT more than about 50 people
7. At off-campus social events of more than about 50 people.
8. At off-campus restaurants/bars

83. At what age did you consume your first alcoholic beverage?

(defined as a 12-oz. can of beer, a 5-oz. glass of wine, or a 1-oz. shot of distilled spirits)

1. I have never consumed a full alcoholic beverage.
2. 12 years or younger
3. 13 years old
4. 14 years old
5. 15 years old
6. 16 years old
7. 17 years old
8. 18 years old
9. 19 years old
10. 20 years old

84. At what age did you first experience intoxication (tipsy, drunk, or sick) from alcohol you consumed?

1. I have never been intoxicated from alcohol.
2. 12 years or younger
3. 13 years
4. 14 years
5. 15 years
6. 16 years
7. 17 years
8. 18 years
9. 19 years
10. 20 years

85. In the year prior to attending Maryland, I drank alcohol frequently.

Strongly Agree Agree Neutral Disagree Strongly Disagree

86. In the year prior to attending Maryland, I got drunk frequently.

Strongly Agree Agree Neutral Disagree Strongly Disagree

The last three items ask whether you would like to receive a copy of the results, what you would like to tell this researcher about social life at Maryland, and your preferred method of communication for campus research. Please be certain to scroll to the **BOTTOM OF THE PAGE** and **PRESS DONE TO RECORD YOUR RESPONSES AND ENTRY**. Thanks.

87. What would you like to tell this researcher about social life at Maryland? (Please limit your response to about 50 words.)

88. I would like to receive a summary of the survey results via my email address when they are available mid-spring.

YES NO

89. When a campus researcher or office wants to ask my opinion, the way I prefer to be contacted is by:

1. Campus or U.S. mail
2. Email for online surveys
3. Campus or local phone (my residence)
4. My cell phone
5. Other

90. If you selected other in the previous item, then please tell us
your preferred method of communication for campus research: _____

NOW you can PRESS DONE. Information on prize notification is on
the next page. Thank you so much for your assistance!

REFERENCES

- Abraído-Lanza, A. F., Chao, M. T., & Flórez, K. R. (2005). Do healthy behaviors decline with greater acculturation? Implications for the Latino mortality paradox. *Social Sciences and Medicine, 61*, 1243-1255.
- Abrams, D., & Hogg, M. A. (1990). An introduction to the social identity approach. In D. Abrams & M. A. Hogg (Eds.), *Social identity theory: Constructive and critical advances*, (pp. 1-9). New York: Springer-Verlag.
- Agostinelli, G., Brown, J. M., & Miller, W. R. (1995). Effects of normative feedback on consumption among heavy drinking college students. *Journal of Drug Education, 25* (1), 31-40.
- Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In J. Kuhl & Beckmann, J. (Eds.), *Action control: From cognition to behavior*, (pp. 11-39). New York: Springer-Verlag.
- Ajzen, I. (1991). The theory of planned behavior. *Organizational behavior and human decision processes, 50*, 179-211.
- Ajzen, I. (2001). Nature and operation of attitudes. *Annual Review of Psychology, 52*, 27-58.
- Ajzen, I. (2002a). TpB Diagram. Retrieved August 2006 from <http://www-unix.oit.umass.edu/~ajzen/tpb.diag.html>
- Ajzen, I. (2002b). Residual effects of past on later behavior: Habituation and reasoned action perspectives. *Personality and Social Psychology Review, 6*, 107-122.
- Ajzen, I., & Fishbein, M. (in press). The influence of attitudes on behavior. In D. Albarracín, B. T. Johnson, & M. P. Zanna (Eds.), *Handbook of attitudes and attitude change: Basic principles*. Mahwah, NJ: Erlbaum.

- Arria, A. (2004). *College Life Study Survey*. College Park, MD: CESAR.
- Astin, A. W. (1996). Involvement in learning revisited: Lessons we have learned. *Journal of College Student Development*, 37, 123-134.
- Astin, A. W. (1993). *Assessment for excellence*. Phoenix, AZ: Oryx.
- Baer, J. S. (2002). Student factors: Understanding individual variation in college drinking. *Journal of Studies on Alcohol, Supplement 14*, 40-53.
- Balkwell, J. W., Berger, J., Webster, M. Jr., Nelson-Kruger, M., & Cashen, J. (1992). Processing status information. *Advances in Group Processes*, 9, 1-20.
- Belenky, M., Clinchy, B., Goldberger, N., & Tarule, J. (1986). *Women's ways of knowing: The development of self, voice, and mind*. New York: Basic Books.
- Bentler, P. M. (2004). *EQS 6 Structural equations program manual*. Encino, CA: Multivariate Software.
- Bentler, P. M. & Speckart, G. (1979). Models of attitude-behavior relations. *Psychological Review*, 86, 452-464.
- Berger, J., B. P. Cohen, & Zelditch, M., Jr. (1966). Status characteristics and expectation states. In J. Berger, M. Zelditch, and B. Anderson (Eds.), *Sociological theories in progress* (pp. 29-46). Boston: Houghton-Mifflin.
- Berkowitz, A. D. (2004a). *An overview of the social norms approach*. Retrieved August 2006 from <http://www.alanberkowitz.com/articles/social%20norms%20approach-short.pdf>
- Berkowitz, A. D. (2004b). *The social norms approach: Theory, research, and annotated bibliography*. Retrieved August 2006 from http://www.alanberkowitz.com/articles/social_norms.pdf

- Berkowitz, A. D., & Perkins, H. W. (1986). Resident advisors as role models: A comparison of drinking patterns of resident advisors and their peers. *Journal of College Student Personnel, 27*, 146-153.
- Bollen, K. A. (1989). *Structural equations with latent variables*. New York: Wiley.
- Bosari, B., & Carey, K. B. (2003). Descriptive and injunctive norms in college drinking: A meta-analytic integration. *Journal of Studies on Alcohol, 64*, 331-341.
- Campo, S., Brossard, D., Frazer, M. S., Marchell, T., Lewis, D., & Talbot, J. (2003). Are social norms campaigns really magic bullets? Assessing the effects of students' misperceptions on drinking behavior. *Health Communication, 15*, 481-497.
- Cashin, J. R., Presley, C. A., & Meilman, P. W. (1998). Alcohol use in the Greek system: Follow the leader? *Journal of Studies on Alcohol, 58*, 63-70.
- Carter, C. A., & Kahnweiler, W. M. (2000). The efficacy of the social norms approach to substance abuse prevention applied to fraternity men. *Journal of American College Health, 49*, 66-71.
- Cartwright, D., & Zander, A. (1968), *Group dynamics* (3rd ed.). New York: Harper & Row.
- Chickering, A. W. (1969). *Education and identity*. San Francisco: Jossey-Bass.
- Chickering, A. W. & Reisser, L. (1993). *Education and identity* (2nd ed.). San Francisco: Jossey-Bass.
- Clapp, J. D., Lange, J. E., Min, J. W., Johnson, M., Shillington, A. M., & Voas, R. (2003). Two studies of environmental predictors of heavy drinking by college students. *Prevention Science, 4*, 99-108.
- Clapp, J. D., Lange, J. E., Russell, C., Shillington, A., & Voas, R. B. (2003). A failed norms social marketing campaign. *Journal of Studies on Alcohol, 64*, 409-414.

- Clapp, J. D., Whitney, M., Shillington, A. M. (2002). The reliability of environmental measures of the college alcohol environment. *Journal of Drug Education, 32*, 287-301.
- Cohen, E. G. (1982). Expectation states and interracial interaction in school settings. *Annual Review of Sociology, 8*, 209-235.
- Cohen, E. G., & Roper, S. S. (1985). Modification of interracial interaction disability. In J. Berger and M. Zelditch, Jr. (Eds.), *Status, rewards and influence* (pp. 350-378). San Francisco: Jossey-Bass.
- Coleman, J. S. (1966). Peer cultures and education in modern society. In T. M. Newcomb & E. K. Wilson (Eds.), *College peer groups* (pp. 245-269). Chicago: Aldine.
- Collins, R. L., Parks, G. A., & Marlatt, G. A. (1985). Social determinants of alcohol consumption: The effects of social interaction and model status on the self-administration of alcohol. *Journal of Consulting and Clinical Psychology, 53*, 189-200.
- Doise, W. (1986). *Levels of explanation in social psychology*. Cambridge, England: Cambridge University Press.
- Dowdall, G. W., & Wechsler, H. (2002). Studying college alcohol use: Widening the lens, sharpening the focus. *Journal of Studies on Alcohol, Supplement 14*, 14-22.
- Driskell, J. E., & Mullen, B. (1990). Status, expectations, and behavior. *Personality and Social Psychology, 16*, 541-553.
- Duncan, T. E., Duncan, S. C., & Hyman, H. (1994). The effects of family cohesiveness and peer encouragement on the development of adolescent alcohol use: A cohort-sequential approach to the analysis of longitudinal data. *Journal of Studies on Alcohol, 55*, 588-599.
- Eagly, A. H., Chaiken, S. (1993). *The psychology of attitudes*. Orlando, FL: Harcourt Brace Javanovich College.

- Ellemers, N., Spears, R., Doosje, B. (1999). *Social identity: Context, commitment, content*. Oxford, England: Blackwell.
- Ericson, N. (2001). Substance abuse: The nation's number one health problem. *Office of Juvenile Justice and Delinquency Prevention Fact Sheet*. Washington, D.C.: U.S. Department of Justice.
- Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention, and behavior: An introduction to theory and research*. Reading, MA: Addison-Wesley.
- Gilligan, C. (1981). Moral development. In A. W. Chickering & Associates (Eds.), *The modern American college: Responding to the new realities of diverse students and a changing society* (pp. 139-157). San Francisco: Jossey-Bass.
- Godin, G., & Kok, G. (1996). The theory of planned behavior: A review of its applications to health behaviors. *American Journal of Health Promotion, 11*, 87-98.
- Gruenewald, P. J., Johnson, F. W., Light, J. M., Lipton, R., Saltz, R. F. (2003). Understanding college drinking: Assessing dose response from survey self-reports. *Journal of Studies on Alcohol, 64*, 500-514.
- Haines, M., & Spear, S. F. (1996). Changing the perception of the norm: A strategy to decrease binge drinking among college students. *Journal of American College Health, 45*, 134-140.
- Hains, S. C., Hogg, M.A., & Duck, J. M. (1997). Self-categorization and leadership: Effects of group prototypicality and leader stereotypicality. *Personality and Social Psychology Bulletin, 23*, 1087-1099.

- Hansen, W. B. (1997). A social ecology theory of alcohol and drug use prevention among college and university students. In Higher Education Center (Ed.), *Designing alcohol and other drug prevention programs in higher education: Bringing theory into practice* (pp. 177-206). Washington, DC: U. S. Department of Education.
- Harrington, B., & Fine, G. A. (2000). Opening the “Black Box”: Small groups and Twenty-first Century sociology. *Social Psychology Quarterly*, 63, 312-323.
- Helms, J. E. (1990). (Ed.). *Black and White racial identity: Theory, research, and practice*. Westport, CT: Praeger.
- Helms, J. (1995). An update of Helm’s White and people of color racial identity models. In J. Ponterotto, J. Casas, L. Suzuki, & C. Alexander (Eds.), *Handbook of multicultural counseling* (pp. 181-198). Thousand Oaks, CA: Sage.
- Hingson, R., Heeren, T., Winter, M., Wechsler, H. (2005). Magnitude of alcohol-related morbidity among U.S. college students ages 18-24: Changes from 1998-2001. *Annual Review of Public Health*, 26, 259-279.
- Hogg, M. A., & Hardie, E. A. (1992). Prototypicality, conformity and depersonalized attraction. A self-categorization analysis of group cohesiveness. *British Journal of Social Psychology*, 31, 41-56.
- Hogg, M. A., & Ridgeway, C. L. (2003). Social identity: Sociological and social psychological perspectives. *Social Psychology Quarterly*, 66, 97-100.
- Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indices in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, 6, 1-55.
- Institute for Social Research (1995). *Monitoring the future: A continuing study of American youth* (BY95 Form 6). Ann Arbor: University of Michigan.

- Kalkhoff, W., & Barnum, C. (2000). The effects of status-organizing and social identity processes on patterns of social influence. *Social Psychological Quarterly*, *63*, 95-115.
- Kegan, R. (1994). *In over our heads: The mental demands of modern life*. Cambridge, MA: Harvard University.
- Klem, L. (2000). Structural equation modeling. In L. G. Grimm, & P. R. Yarnold (Eds.), *Reading and understanding more multivariate statistics* (pp 227-260). Washington, DC: American Psychological Association.
- Jasso, G. (2001). Studying status: An integrated framework. *American Sociological Review*, *66*, 96-124.
- Johnston, K. L., & White, K. M. (2003). Binge-drinking: A test of the role of group norms in the theory of planned behavior. *Psychology and Health*, *18*, 63-77.
- Keeling, R. P. (2000). Social norms research in college health. *Journal of American College Health*, *49*, 53-56.
- Keeling, R. P. (1999). Proceed with caution: Understanding and changing norms. *Journal of American College Health*, *47*, 243-246.
- Kline, R. B. (1998). *Principles and practice of structural equation modeling*. New York: Guilford.
- Korcuska, J. S., & Thombs, D. L. (2003). Gender role conflict and sex-specific drinking norms: Relationships to alcohol use in undergraduate men and women. *Journal of College Student Development*, *44*, 204-126.
- Landrine, H., & Klonoff, E. A. (2004). Culture change and ethnic-minority health behavior: An operant theory of acculturation. *Journal of Behavioral Medicine*, *27*, 527-555.

- Lei, M., & Lomax, R. G. (2005). The effect of varying degrees of nonnormality in structural equation modeling. *Structural Equation Modeling, 12*, 1-27.
- LeVine, R. A. (1966). American college experience as a socialization process. In T. M. Newcomb, & E. K. Wilson (Eds.), *College peer groups* (pp. 107-132). Chicago: Aldine.
- Lomax, R. G. (1998). *Statistical concepts: A second course for education and the behavioral sciences*. Mahwah, NJ: Lawrence Erlbaum.
- Luhtanen, R. & Crocker, J. (1992). A collective self-esteem scale: Self-evaluation of one's social identity. *Personality and Social Psychology Bulletin, 18*, 302-318.
- Maassen, G. H., & Bakker, A. B. (2001). Suppressor variables in path models: Definitions and interpretations. *Sociological Methods and Research, 30*, 241-270.
- Markovsky, B., Smith, L. R. F., & Berger, J. (1984). Do status interventions persist? *American Sociological Review, 49*, 373-382.
- Mattern, J. L., & Neighbors, C. (2004). Social norms campaigns: Examining the relationship between changes in perceived norms and changes in drinking levels. *Journal of Studies on Alcohol, 65*, 489-493.
- McCabe, S. E., Boyd, C. J., Couper, M. P., Crawford, S., & D'Arcy, H. (2002). Mode effects for collecting alcohol and other drug use data: Web and U.S. mail. *Journal of Studies on Alcohol, 63*, 755-761.
- Meeker, B. F., & Weitzel-O'Neill, P. A. (1985). Sex roles and interpersonal behavior in task-oriented groups. In J. Berger & M. Zelditch, Jr. (Eds.), *Status, rewards and influence* (pp. 379-405). San Francisco: Jossey-Bass.

- Miller-Loessi, K. (1995). Comparative social psychology: Cross-cultural and cross-national. In K. S. Cook, G. A. Fine, & J. S. House (Eds.), *Sociological perspectives on social psychology* (pp. 397-420). Boston: Allyn and Bacon.
- National Research Council and Institute of Medicine (2003). *Reducing underage drinking: A collective responsibility*. Committee on Developing a Strategy to Reduce and Prevent Underage Drinking, R. J. Bonnie & M. E. O'Connell (Eds.). Board on Children, Youth, and Families, Division of Behavioral and Social Sciences and Education. Washington, DC: The National Academies.
- Newcomb, T. M., and Wilson, E. K. (Eds.). (1966). *College peer groups*. Chicago: Aldine.
- NIAAA Task Force of the National Advisory Council on Alcohol Abuse and Alcoholism. (2002). *A call to action: Changing the culture of drinking at U.S. colleges*. (NIH Publication no. 02-5010). Washington, DC: U.S. Department of Health and Human Services.
- Oakes, P. J., Haslam, S. A., & Turner, J. C. (1994). *Stereotyping and social reality*. Oxford, England: Blackwell.
- Oldmeadow, J. A., Platow, M. J., Foddy, M., & Anderson, D. (2003). Self-categorization, status and social influence. *Social Psychology Quarterly*, 66, 138-152.
- Pascarella, E. T., & Terenzini, P. T. (1991). *How college affects students: Findings and insights from twenty years of research*. San Francisco: Jossey-Bass.
- Pascarella, E. T., & Terenzini, P. T. (2005). *How college affects students: A third decade of research*. San Francisco: Jossey-Bass.

- Perkins, H. W. (1997). College student misperception of alcohol and other drug norms among peers: Exploring causes, consequences, and implications for prevention programs. In Higher Education Center (Ed.), *Designing alcohol and other drug prevention programs in higher education: Bringing theory into practice* (pp. 177-206). Washington, DC: U. S. Department of Education.
- Perkins, H. W. (2003). *The social norms approach to preventing school and college age substance abuse: A handbook for educators, counselors, and clinicians*. San Francisco: Jossey-Bass.
- Perkins, H. W., & Berkowitz, A. D. (1986). Perceiving the community norms of alcohol use among students: Some research implications for campus alcohol education programming. *The International Journal of the Addictions, 21*, 961-976.
- Perkins, H. W., Haines, M. P., & Rice, R. (2005). Misperceiving the college drinking norm and related problems: A nationwide study of exposure to prevention information, perceived norms and student alcohol misuse. *Journal of Studies on Alcohol, 66*, 470-478.
- Presley, C., Meilman, P., & Lyerla, R. (1994). Development of the CORE alcohol and drug survey: Initial findings and future directions. *Journal of American College Health, 42*, 248-255.
- Rhodes, R. E., & Courneya, K. S. (2003). Self-efficacy, controllability and intention in the theory of planned behavior: Measurement redundancy or causal independence? *Psychology and Health, 18*, 79-91.
- Ridgeway, C. L. (1991). The social construction of status value: Gender and other nominal characteristics. *Social Forces, 70*, 367-386.

- Ridgeway, C. L. (1997). Where do status beliefs come from? New developments. In J. Szmataka, J. Skvoretz, & J. Berger (Eds.), *Status, network and structure* (pp. 137-158). Stanford, CA: Stanford University.
- Ridgeway, C. L. (2000). The formation of status beliefs: Improving status construction theory. *Advances in Group Processes, 17*, 77-102.
- Ridgeway, C. L., & Balkwell, J. W. (1997). Group processes and the diffusion of status beliefs. *Social Psychology Quarterly, 60*, 14-31.
- Ridgeway, C. L., Boyle, E. H., Kuipers, K. J., & Robinson, D. T. (1998). How do status beliefs develop? The role of resources and interactional experience. *American Sociological Review, 63*, 331-350.
- Ridgeway, C. L., & Erikson, K. G. (2000). Creating and spreading status beliefs. *American Journal of Sociology*. Retrieved August 2006 from <http://www.journals.uchicago.edu/AJS/journal/issues/v106n3/050238/050238.text.html>
- Ridgeway, C. L., & Walker, H. A. (1995). Status structures. In K. S. Cook, G. A. Fine, & J. S. House (Eds.), *Sociological perspectives on social psychology* (pp. 281-310). Boston: Allyn and Bacon.
- Rosenholtz, S. J., & Cohen, E. G. (1985). Activating ethnic status. In J. Berger & M. Zelditch, Jr. (Eds.), *Status, rewards and influence* (pp. 430-444). San Francisco: Jossey-Bass.
- Savalei, V., & Bentler, P. (2005). A statistically justified pairwise ML Method for Incomplete Nonnormal Data: A comparison with direct ML and pairwise ADF. *Structural Equation Modeling, 12*, 183-214.
- Sax, L. J., Gilmartin, S. K., & Bryant, A. N. (2003). Assessing response rates and nonresponse bias in web and paper surveys. *Research in Higher Education, 44*, 409-431.

- Schofield, P. E., Pattison, P. E., Hill, D. J., & Borland, R. (2001). The influence of group identification of the adoption of peer group smoking norms. *Psychology and Health, 16*, 1-16.
- Schulenberg, J. E., & Maggs, J. L. (2002). A developmental perspective on alcohol use and heavy drinking during adolescence and the transition to young adulthood. *Journal of Studies on Alcohol, Supplement 14*, 54-64.
- Sheeran, P. & Orbell, S. (1999). Augmenting the theory of planned behavior: Roles for anticipated regret and descriptive norms. *Journal of Applied Social Psychology, 29*, 2107-2142.
- Snyder, R. B. (2001). *Understanding social-psychological peer contexts of alcohol use among college students using focus group interviews and content analysis: A link to status and means of status interventions?* Unpublished manuscript.
- Snyder, R. B., & Sedlacek, W. E. (2001). [University New Student Census 2001]. Unpublished raw data.
- Snyder, R.B., & Sedlacek, W.E. (2002). [University New Student Census 2002]. Unpublished raw data.
- Snyder, R. B., & Sedlacek, W. E. (2003). *Favoring the in-group or out-group? Exploring status beliefs and peer contexts of alcohol use among college students.* Research Report No. 13-03. College Park, MD: University of Maryland Counseling Center.
- Stacy, A. W., Newcomb, M. D., & Bentler, P. M. (1996). Interactive and higher-order effects of social influences on drug use. *Journal of Health and Social Behavior, 33*, 226-241.
- Tajfel, H. (1978). *Differentiation between social groups: Studies in the social psychology of intergroup relations.* London: Academic Press.

- Tajfel, H. (1982). *Social identity and intergroup relations*. Cambridge, England: Cambridge University Press.
- Tajfel, H., Billig, M. G., Bundy, R. P., & Flament, C. (1971). Social categorization and intergroup behavior. *European Journal of Social Psychology, 1*, 149-178.
- Tajfel, H., & Turner, J. C. (1979). An integrative theory of intergroup conflict. In W. G. Austin & S. Worchel (Eds.), *The social psychology of intergroup relations*. Monterey, CA: Brooks-Cole.
- Tajfel, H., & Turner, J. C. (1986). The social identity theory of intergroup behavior. In S. Worchel, & W. G. Austin, (Eds.). *Psychology of intergroup relations*. Chicago: Nelson-Hall.
- Tapert, S. F., Caldwell, L., Burke, C. (2004/2005). Alcohol and the adolescent brain: Human studies. *Alcohol Research and Health, 28*, 205-212.
- Terry, D. J., & Hogg, M. A. (1996). Group norms and the attitude-behavior relationships: A role for group identification. *Personality and Social Psychology Bulletin, 22*, 776-793.
- Terry, D. J., & Hogg, M. A. (2000). *Attitudes, behavior, and social context: The role of group norms and group membership*. Mahwah, NJ: Lawrence Erlbaum.
- Trafimow, D. (2001). Condom use among U.S. students: The importance of confidence in normative and attitudinal perceptions. *The Journal of Social Psychology, 14*, 49-59.
- Trafimow, D., & Finlay, K. A. (2001). Evidence for improved sensitivity of within participants analyses in tests of the theory of reasoned action. *The Social Science Journal, 38*, 629-635.

- Trockel, M., Williams, S. S., & Reis, J. (2003). Considerations for more effective social norms based alcohol education on campus: An analysis of different theoretical conceptualizations in predicting drinking among fraternity men. *Journal of Studies on Alcohol, 64*, 50-59.
- Turner, J. C. (1982). Towards a cognitive redefinition of the social group. In Henri Tajfel (Ed.), *Social identity and intergroup relations* (pp. 15-40). Cambridge, England: Cambridge University Press.
- Turner, J. C. (1985). Social categorization and the self-concept: A social cognitive theory of group behavior. *Advances in Group Processes, 2*, 77-121.
- Turner, J. C. (1991). *Social influence*. Pacific Grove, CA: Brooks/Cole.
- Turner, J. C., Hogg, M. A., Oakes, P. J., Reicher, S. D., & Wetherell, M. S. (1987). *Rediscovering the social group: A self-categorization theory*. Oxford, England: Basil Blackwell.
- Turner, J. C., & Oakes, P. J. (1989). Self-categorization theory and social influence. In P. B. Paulus (Ed.), *Psychology of group influence* (pp. 233-275). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Valente, T. W., Unger, J. B., & Johnson, C. A. (2005). Do popular students smoke? The association between popularity and smoking among middle school students. *Journal of Adolescent Health, 37*, 323-329.
- Wechsler, H., Davenport, A., Dowdall, G., Moeykens, B., & Castillo, S. (1994). Health and behavioral consequences of binge drinking in college: A national survey of students at 140 campuses. *Journal of the American Medical Association, 272*, 1672-1677.

- Wechsler, H., & Kuo, M. (2003). Watering down the drinks: The moderating effect of college demographics on alcohol use of high-risk groups. *American Journal of Public Health, 93*, 1929-1933.
- Wechsler, H., Nelson, T. F., Lee, J. E., Seibring, M., Lewis, C., & Keeling, R. P. (2003). Perception and reality: A national evaluation of social norms marketing interventions to reduce college students' heavy alcohol use. *Journal of Studies on Alcohol, 64*, 484-494.
- Weitzman, E. R., Nelson, T. F. & Wechsler, H. (2003). Taking up binge drinking in college: The influences of person, social group, and environment. *Journal of Adolescent Health, 32*, 26-35.
- White, H. R., & Jackson, K. (2004/2005). Social and psychological influences on emerging adult drinking behavior. *Alcohol Research and Health, 28*, 182-190.
- Worrchel, S., Morales, J. F., Paez, D., & Deschamps, J-C. (1998). *Social identity: International perspectives*. Thousand Oaks, CA: Sage.