MECHANISM, TRANSMISSION AND ENFORCEMENT OF SOCIAL NORMS:

A STUDY OF COLLEGE STUDENTS' DRINKING BEHAVIOR

By

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ABSTRACT

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Evidence of normative influence on health behavior has been broadly identified; however, issues regarding the mechanism, transmission and enforcement of norms remain to be understood. Drawing from Giddens' (1984) Theory of Structuration, Rogers' Diffusion of Innovation (1983), and Bandura's Social Cognitive Theory (1983), this dissertation examines the mediating roles of cost-benefit judgments, interpersonal communication and social sanctions in the norms-behavior and norms-intention relations. Specifically, this study proposes that group norms indirectly impact behavior or intention by affecting the ways that group members judge behaviors. In addition, normative messages are shared through the process of interpersonal communication and norms become effective when they are enforced through social sanctions.

An online survey of over 500 students from various student organizations in a major university was conducted to determine the influence of group norms on drinking behavior and intention. Results of structural equation modeling indicated that perceived benefit of drinking was positively associated with drinking intention and behavior. The perceived benefit also fully mediated the norm-intention and norm-behavior relations. The perceived cost resulting from drinking, however, was not a significant predictor of either drinking intention or behavior. Both social reward and punishment had positive direct effects on drinking intention and are significant

mediators of norms and drinking intention, but not of actual drinking behavior. Communication patterns fully mediated both the norms-behavior and norms-intention relations. These mediation findings suggest that: 1) the norms-intention relationship will not be well established without the process of social sanctions; 2) the influence of group norms on both behavior and intention depend on the perceived benefit of judgment on drinking and the level of communication about drinking among group members. These results have significant importance for the effective design of public health campaigns.

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Dedication

This manuscript is dedicated to my daughters, Yukai and YiAn, who were born while doing the research for this dissertation.

CHAPTER ONE

INTRODUCTION

Introduction of This Research

This research examines the relationship between normative influence and health decision-making, and attempts to pursue more satisfactory answers to the questions: "how do norms influence behaviors?" "how are norms shared among group members?" and "how are norms enforced?" Specifically, this research investigates mechanisms through which norms affect health behaviors by analyzing relationships among group norms, cost-benefit judgments, intention and behavior. In addition, this study explores norms transmission by examining the concept of social interaction such as interpersonal communication patterns. Perceived social sanctions associated with drinking behavior are further examined under the concept of norms enforcement. The influence of group norms on college students' drinking intention and behavior is empirically tested. Understanding these relationships has both theoretical as well as empirical contributions across different disciplines such as social psychology, health communication and public health.

Problem Statement

College Drinking Problem

The behavioral issue in this study is college student's alcohol consumption. Excessive consumption of alcohol is one of the major health threats for adolescents and young adults in the United States. According to the National Survey on Drug Use and Health (NSDUH), young adults aged 18-25, peaking at age 21, had the highest rate of heavy drinking in 2003 (Substance

Abuse and Mental Health Services Administration [SAMHSA], 2004)[1]. Heavy alcohol consumption is a prevalent behavior among college students in the US. For example, approximately 40%–45% of college students report engaging in heavy episodic drinking (e.g., O'Malley & Johnson, 2002; Wechsler & Kuo, 2000). Drinking behavior has a broader social impact than just alcohol consumption per se. Evidence suggests that excessive use of alcohol among college students is linked to risk of criminal behavior, unsafe or unwanted sexual experiences, academic problems, depression, eating disorders, anxiety, injuries and death (Hingson et al., 2002; Johnston et al., 2004; Larimer, et al., 2004; National Institute on Alcohol Abuse and Alcoholism, NIAAA, 2004; Wechsler et al., 1994). Despite the fact that students' average daily alcohol consumption generally is lower than their perceptions of peers, college students are at particular risk of heavy drinking.

Peer Influence

College students are at a stage in life when they care intensely about social relationships. Peer influences thus become more powerful in shaping young people's behavior than personality, biological, familial, religious, or cultural influences (Perkins, 2002). For example, research has shown that peer influence is a strong predictor of adopting behaviors such as heavy drinking, unhealthy eating and unsafe sex among college students. In addition, college students mainly drink alcohol for social reasons and generally perceive that alcohol can enhance their social interaction (e.g., Neighbor et al., 2007; Stewart, Zeitlin & Samoluk, 1996). Social or peer influence that is associated with unhealthy behaviors among young adults becomes an important issue for researchers. Social influence refers to the way that one individual's opinions and

[1]Heavy drinking for men is often defined as having five or more alcoholic drinks on one occasion, meaning in a row or within a short period of time. For women, heavy drinking is defined as having four or more alcoholic drinks on one occasion.

attitudes affect another person's behavior, opinions, and attitudes (Martin & Hewstone, 2003). One type of social influence is social norms, which are essential to the understanding of social order and human behavior (Hechter & Opp, 2001). Social influence exists in the context of social groups where group members are influencing each other and group norms form and change through such processes (Martin & Hewstone, 2003). Group norms reflect the dominant attitudes and behaviors that majority of group members are expected to perpetuate (Perkins, 2002a; 2002b). Perhaps, understanding the link between group norms and drinking decisions can help researchers analyze the different factors in contributing alcohol consumption and to develop an effective intervention to reduce alcohol consumption among college students.

Social Norms Approach

Individuals conform to group expectations because of the desire for social approval and making the right choices. However, individuals often have misperceptions about their group's attitudes and behaviors. Much of our behavior is possibly influenced by these incorrect perceptions of how other group members think and act. For example, individuals often overestimate certain behaviors that are unhealthy, and this overestimation may further increase these unhealthy behaviors. Underestimating the prevalence of healthy social behaviors may discourage individuals from engaging in these healthy behaviors. Therefore, social norms approach suggests that correcting these misperceptions is a possible way to increase the prevalence of healthy social behaviors (Berkowitz, 2004; Perkins, 2002a; 2002b). Recently, creating an environment that discourages high-risk drinking by using a social norms approach is one of the important interventions employed at various campuses in the U.S.

The social norms approach argues that once individuals correct the misperceived norms

so that it matches the actual norms, individuals will change their behavior accordingly (Perkins & Berkowitz, 1986). To some college students, social norms campaigns are useful to target those who overestimate the true norms of alcohol use. Perkins and Berkowitz (1986) assert that correcting the misperception of drinking by reducing or eliminating the discrepancy would lead to a corresponding behavior change. For example, Northern Illinois University reduced by 44% over a decade the occurrence of heavy alcohol consumption (Frauenfelder, 2001) and University of Arizona saw a 29.2% decline over several years of implanting a social norms campaign along with other education programs (Johannessen, Collins, Mills-Novoa, & Glider, 1999). On the other hand, researchers argue that normative influence on drinking behavior is controversial and results remain mixed (Campo et al., 2003; Rimal & Real, 2003; Wechsler et al., 2003). Due to these mixed empirical findings in the norms literature, there is a need for further investigation before reaching any conclusions about the efficacy of social norms approach.

Research Goals

While the evidence for normative influence has been broadly identified, the lack of a theoretical explanation for the social norms approach in relation to specific behavior is a more serious concern (e.g., Keeling, 1999, 2000). In addition, little empirical research has focused on understanding the mechanisms of normative influence and the contextual factors responsible for the process of behavioral change. Thus, questions about the relationship between norms and decision-making remain unresolved. Both decision-making and norms are complex concepts and this dissertation does not seek to solve their conceptual problems categorically. The goal of this dissertation is more modest by exploring the process of normative influence that leads to behavioral intentions and decision-making.

First, this study attempts to propose a theoretical model mediating the process whereby group norms influence intention and behavior through cost-benefit evaluations on drinking. Second, this study hopes to provide a deeper understanding of normative influence by examining transmission and enforcement of group norms through the process of interpersonal communication and social sanctions respectively. In other words, cost-benefit evaluations, interpersonal communication patterns and social sanctions are viewed as the mediators of norms-intention and norms-behavior relations.

Contributions

This research has both theoretical and empirical contributions. A number of empirical studies have identified the factors or mechanisms that are associated with alcohol consumption or social norms, but little attention has been given to the analysis of norms transmission and norms enforcement. This research provides a broader implication for both the alcohol and norms literatures by examining three important concepts including norms mechanism, norms transmission and norms enforcement, instead of simply identifying college students' drinking levels or negative consequences of drinking. At the theoretical level, the mediators of social norms require a deeper examination in order to explain the process of normative influence and to specify under what conditions normative influence would hold[2]. Therefore, the present study makes a unique contribution by exploring the mediating roles of norms (i.e., cost-benefit judgments, interpersonal communication and social sanctions) and their

[2]A mediator variable explains the relationship between the two other variables while a moderator indicates one variable influencing the strength of a relationship between two other variables. For example, age might be a moderator, in that the relation between eating healthy and weight control could be stronger for older women and less strong or nonexistent for younger women. Education might be a mediator in that it explains why there is a relation between eating healthy and weight control. When we remove the effect of education, the relation between eating healthy and weight control disappears. For more information, see Baron and Kenny (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51, 1173-1182.

influences on behaviors instead of considering their independent impact. This study also hopes to clarify the power of social influence on shaping behavioral intention and decision-making.

Conceptualizing group norms as both constraining and enabling is essential (Giddens, 1984). This research proposes a model that integrates both of the structural and agency views of norms to explain the influence of norms. At the empirical level, a group-level of social interaction context instead of just an interpersonal one is necessary to understand normative influence because norms occur through interaction with others. Therefore, this study specifies the importance of group norms in relation to college students' drinking behavior. In regard to alcohol intervention, the present research provides a guideline to identify important factors that are associated with normative influence and to improve social norms campaign in reducing alcohol consumption among college students. One of the important implications is that health education efforts should pay more attention to the environmental and social interaction factors that may reinforce the culture of excessive drinking.

Overview of Theoretical Arguments

To investigate the relationships among group norms, intention and behavior, this dissertation relies on various social psychology and communication theories to suggest plausible causal mechanisms and propose an integrated model to explain the influence of group norms. Specifically, Giddens' Theory of Structuration (1984) is used to conceptualize the structural and agency views of norms. Bandura's (1977) Social Learning Theory (or Social Cognitive Theory) captures the relationships among norms, cost-benefit evaluations and behavior in this research. Rogers' (2003) Diffusion of Innovation helps this research to explain the transmission of norms. In addition, the norms enforcement literature is useful to identify the relationships among norms,

social sanctions, and behavior.

The theoretical assumptions of this dissertation begin with the simple observations that norms guide our behavior as well as behavioral consequences. This dissertation distinguishes two important perspectives of norms including structural and agency, and assumes that structure is located in instances of actions and located at the level of agency. On the other hand, the present research views individuals' actions are shaped by macro structures such as norms that constrain our behaviors. In other words, the structural view of norms would be strengthened by incorporating the agency perspective and vice versa.

To understand why norms influence our behavior, sociologists provide two general perspectives (see Hechter & Horne, 2003 for a review). One perspective suggests that norms become effective when individuals observe a particular behavior more frequently, and thus, a sense of oughtness is developed. The other perspective indicates that people care about external consequences from actions and the opinions of other people. Therefore, consequences of actions produce individuals' judgments and behaviors. These two perspectives are important and useful to explain normative influence. This research, however, provides alternative arguments to enhance these two perspectives by evaluating applied decision-making models across different disciplines. Specifically, these two assumptions for explaining norms-behavior relation include: norms with deliberations and norms without deliberations. This study emphasizes norms are deliberative and argues that explaining a deliberate process of norms is essential to understanding mechanism, transmission and enforcement of norms. These assumptions are fundamental notions to the proposed decision-making model in this research.

The underlying assumptions of this dissertation include that: 1) norms should be conceptualized as both constraining and enabling; 2) individual- and group-level constructs

associated with norms should both be examined; 3) intermediate phenomena should be analyzed and 4) the conditions that identify the strength of normative influence should be researched. In particular, three key processes that link norms and decision-making can be identified:

1) Cost-benefit judgments mediate the relationships among group norms, intention and behavior. That is, group norms influence judgments, which in turn influence drinking intention and behavior. In other words, this study expects that norms influence intention or behavior only through cost-benefit judgments. Separating the concept of judgments from the construct of norms is important; on the other hand, it should not be treated as an independent predictor of decision-making. Many decision-making models have treated cost-benefit judgments and norms as separate predictors of behavioral intention; this assumption tends to underestimate the power of norms (Louis, Taylor & Douglas, 2005). Therefore, cost-benefit evaluations as a mediating role are more sufficient in explaining the impact of norms.

2) Besides examining the global effects of cost-benefit judgments, this study also analyzes two types of judgments on drinking: social and health (i.e., tension reduction and behavioral impairment). Distinguishing different valence and types of outcome expectancy is necessary because we could assess specific effects of alcohol and judgment processing associated with drinking.

3) Social interaction influences the process of norms transmission. Specifically, this study hypothesizes that norms are shared among group members through the process of interpersonal communication. That is, group norms influence interpersonal communication about alcohol consumption, which in turn influence college students' drinking intention and behavior.

4) Norms are enforced through the process of social sanctions (i.e., reward and punishment). Therefore, this study identifies social sanctions as another important mediator of norms and expects that group norms influence the level of perceived social sanctions, which in turn influence drinking intention and behavior.

The theoretical arguments in this research suggest two general conclusions. First, norms constrain our behaviors, but this relationship requires individuals' cost and benefit judgments. That is, individuals are not entirely free, and care about others' reactions when making a decision. On the other hand, individuals do not blindly conform to group norms and may make judgments and evaluations before making that decision. This conclusion is consistent with Giddens' *Theory of Structuration* (1984), such that structure and agency of society both constrain and enable our actions. Second, normative messages are shared and transmitted through the process of interpersonal communication. Finally, normative influence is perhaps stronger when groups are more cohesive and when network characteristics (strength of ties) are identified more closely among group members. This conclusion is consistent with arguments suggesting the importance of communication for interpersonal influence and of cohesion and networks for the explanation of group dynamic.

Research Design and Analysis

A cross-sectional online survey was conducted to test this study's hypotheses. Data was collected from a sample of undergraduates registered in various student organizations at University of Tennessee (UT). This research started with a pretest of an initial online questionnaire sent to a sample of undergraduates at Washington State University (WSU). After refining the questionnaire based on the pretest results, the revised survey was then administered

to a sample of 547 students at UT.

The survey instrument development process was characterized by extensive literature review, item generation and validation, expert review and the process of pretesting and revisions. Prior to hypothesis testing, measurement validation using exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were first analyzed. Structural equation model (SEM) estimation of path coefficients was further used for hypothesis testing. Mediation effects of cost-benefit judgments, interpersonal communication and social sanctions were tested by conducting significance tests for respective indirect effects. Specific details of research design, procedures and statistical analysis techniques are discussed in Chapter Five.

Organization of the Dissertation

This dissertation is organized by the following chapters: 1) introduction, 2) conceptual and theoretical background, 3) theoretical framework and hypotheses, 4) research design and method, 5) data analysis and results and 6) discussion and implications. Chapter One provides rationale for the study, summarizes topic of the research and theoretical basis, and outlines the general plan of this dissertation. Chapter Two details the fundamental concepts that are related to norms and decision-making including behavioral issues, study setting, and definition, sources and perspectives of norms. Chapter Three discusses a review of literatures relevant to the mechanism, transmission and enforcement of norms. This chapter also provides the development of a conceptual model and hypothetical relationships among variables for the present research. Chapter Four details research design and methods including research context, sample design and data collection, operationalization of concepts, development of survey instrument and statistical analysis techniques. Chapter Five presents the results of this study including response rate,

respondent characteristics, scale validations and results of hypothesis testing. Finally, Chapter Six concludes with a discussion of major findings, contributions, implications, limitations and suggestions for future research.

CHAPTER TWO

CONCEPTUAL AND THEORETICAL BACKGROUND

Chapter Overview

This chapter contains three main points of discussion. I begin with addressing the question, “how do individuals make decisions?” by providing two explanations: behavioral consequences lead to decisions without norms, and norms lead to decisions. For the assumption that consequences lead to decisions, I discuss the pure rationality approach and the outcome expectancies approach. Before I illustrate this study's main assumption that norms guide our behaviors, I consider two different sources of norms and argue the importance of studying group norms. I continue with a discussion of the conceptualization of norms by illustrating various definitions of norms. Further, I analyze two perspectives on norms including the structural and the agency views and bring in the criticisms of pure theories of structure and agency from sociologists' views. Most importantly, I propose an integrated perspective of norms based on Giddens' Theory of Structuration (1984). Finally, this chapter ends with a discussion of the relationship between norms and behavior including two main assumptions: 1) norms with deliberation and 2) norms without deliberation.

Behavioral Consequences Lead to Decisions

Pure Rationality Approach

Early applied decision-making research considers that the consequences, such as punishment and reward, of a behavior, determine one’s decision-making (e.g., Feather, 1982;

Savage, 1954). This rationality assumption is based on three assumptions: 1) punishments or rewards will occur if a behavior is performed; 2) all actions can be ranked in the order of personal preference; and 3) if an actor prefers action A to action B and prefers action B to action C, then that actor will prefer action A to action C (Savage, 1954). That's usually referred to as "transitivity." In other words, people make decisions based on the notion that individuals "want" to either obtain rewards or avoid disapproval or punishment. If we know the costs and benefits that individuals judge from enacting a behavior, we may predict the probability with which one will perform that behavior.

Because of the assumption that reinforcement through rewards and punishments determines our behavior (e.g., Homan, 1961, Law of Effect, Herrnstein, 1970), most behaviors are studied in external and objective situations; individuals' cognitive or internal state is irrelevant to decision-making because people can learn from past experiences. However, people may not make decisions just based on an order of preferences; frequently, we pay attention to others' reactions to our behavior. The pure rationality assumption mainly focuses on individual-level cost and benefit calculations and neglects institutional or societal constants such as norms. As a result, the traditional rational choice approach does not explain either pro-social behaviors or cooperation in a group setting; neither does it sufficiently explain the process of decision-making (discussed more in the later section of rational choice of norms).

Outcome Expectancies Approach

Some scholars emphasize the importance of internal states, such as motivation, and provide explicit explanations of behavioral motivation (Bolles, 1967; Vroom, 1964). For example, expectancies theory (Vroom, 1964) uses motivation as a utility maximization approach

and considers motivation as an outcome of valence (emotional orientations), instrumentality (determined outcomes) and expectancies (self-efficacy). High motivation results from high levels of expectancies, instrumentality, and valence. Therefore motivation will be high when a worker desires the outcomes resulting from high performance (valence) if he or she knows their efforts will lead to high performance (expectancies) and if he or she perceives that high performance leads to the attainment of the desired outcomes (instrumentality). This expectancies approach contains principles of social learning through observable behaviors (Bandura, 1977) as well as constructs based on cognitive processes that are not directly observable (White, Bates & Johnson, 1990). In alcohol research, the outcome expectancies assumption has been widely used to predict health behavior such as alcohol consumption (Brown, 1985; Christiansen et al., 1989). Alcohol consumption is explained by the expectations that individuals hold regarding alcohol or concerning the effects of alcohol. For example, evidence has shown that positive outcome expectancies are associated with heavier alcohol consumption (Carey, 1995).

In comparison with a pure rationality assumption, expectancies theory provides a clear explanation of the cognitive process of decision-making as based on the assumptions of social learning and observations from others. Still, this approach focuses on interpersonal contexts or individual-level perceptions (i.e., positive or negative perceived outcomes) and neglects environmental or social factors. In other words, the pure expectancies assumption does not explicitly explain or assess group-level or societal constructs such as individuals' reactions to others, group interaction, or societal norms. For example, evidence indicates that normative beliefs about close friends' drinking practices, rather than the perceived risks of alcohol, were more closely associated with alcohol assumption among college students (Lewis & Thombs, 2005). The connection to a broader social aspect is neglected in this approach; thus, the

expectancies approach can only partially explain the process of decision-making. Drawing on the theoretical framework from expectancies theory and the norms literature, this research supports the argument that norms guide our behaviors as the important determinant of decision-making. The next section discusses the source and conceptualization of norms, and presents an integrated view of norms and the relationship between norms and behavior.

Norms Lead to Decisions

This research asserts that norms lead to decision-making and supports the argument that social norms are powerful determinants of, and a fundamental explanation for, human behavior (Hechter & Opp 2001, Rachlinski 2000). For example, norms regulate human behavior and social phenomena in the areas of social networks (Cook & Hardin, 2001), government effectiveness (Putnam, 1994), law (Ellickson, 1991), crime (Sampson, Raudenbush & Earls, 1997), economics (Eggertsson, 2001), cooperation (Axelrod, 1984), marriage (Kanazawa & Still, 2001), journalism (Schudson, 2001), smoking (Rabin & Sugarman, 1993) and so on. It is important to continue investigating the impact and process of norm formation on human behavior. In this section I focus on theoretical arguments for the link between norms and behavior. Before proposing the two main assumptions of the norm-behavior link, I provide theoretical background about the source of norms (i.e., interpersonal and group norms), the conceptualization of norms and the perspective of norms and then propose an integrated view of norms.

Source of Norms

Before discussing the theoretical arguments for the notion that norms lead to decisions, it

is important to recognize the different sources of normative influence. In this section, I first illustrate the two main sources of norms: 1) interpersonal and 2) group norms and then argue that norms should be assessed at the group level and that group norms are more appropriate to explain decision-making than interpersonal norms.

Interpersonal Norms

Three kinds of interpersonal norms have been studied by scholars in different disciplines including: subjective, injunctive and descriptive norms. Subjective norms indicate that the expectations of significant others, with particular emphasis on family and friends, are important guidelines that influence our attitude and behavior (i.e., Fishbein & Ajzen's Theory of Reasoned Action, 1975). The fundamental assumption of subjective norms relies on the thought of individuals' need for approval from family and friends. Another type of norm that is similar to the subjective is the concept of injunctive norms. Injunctive and descriptive norms are the most common measures used in many empirical studies. Descriptive norms refer to the prevalence of actual behavior whereas injunctive norms are the approval or disapproval of a certain behavior (Cialdini, Reno & Kallgren, 1990). A typical measure for these three types of interpersonal norms is that participants are asked the extent to which one's significant others or reference groups expect them to perform a particular action. Thus, individual's decision-making is weighted by self-reported intentions to comply with the significant others or reference groups. Indeed, these interpersonal norms are perceived norms that are mainly derived from perceptions of self's or of other's behaviors. There is no doubt that perceptions and internal states are essential to decision-making. However, if norms are only based on individual psychological levels without being explicitly connecting to groups and organizational or societal levels, it is

difficult to claim that any behaviors or decisions are normative.

Ingroup Norms

For the social identity model of decision-making, ingroup norms, rather than outgroup or societal norms are the primary focus (Hogg & Turner, 1987). Outgroup norms are perceived as irrelevant to decision-making in social identity theory because individuals do not identity with groups to which they do not belong. Recently, however, some scholars suggest that outgroup norms are important source for influencing our decision-making (e.g., Louis, Taylor & Douglas, 2005).

Ingroup norms have long been documented as an important influence on individuals' behaviors. Early social psychologists examined social influence based on the assumption that people conform to the majority views under in certain social situations. For instance, Sherifs' studies (1935, 1936) demonstrate that people rely on information provided by other group members to determine the correct behavior when there is no objectively correct response or when people feel unsure of themselves. Thus, social norms can emerge from interpersonal interaction, and the influence of group norms would continue even without the group's presence. Furthermore, Asch's line-judgment experiments (1951) suggest that individuals will reexamine their beliefs and conform to majority's judgments even when they are given incorrect answers due to a strong group consensus. Asch's study illustrates normative influences that even though participants correctly judged a task in isolation, they often chose incorrect answers supported by the majority in order to fit in and avoid deviating from the group. Asch (1951) clearly demonstrates that consensual group influence can change one's behavior without changing beliefs or perceptions. But how can we know whether our choices are wise and effective?

Frequently, we rely on advice from authorities and social comparisons to show our decisions to be correct. Milgram's obedience study (1963, 1974) demonstrates people's deference to authority even in life-threatening situations. These classic conformity studies confirm the strong impact of group norms on individuals' behavior.

Instead of focusing on interpersonal norms that rely on psychological perceptions at the individual level, this dissertation asserts that ingroup norms are more appropriate to explain the decision-making process because norms should be considered at the group-level[3]. Group norms are important in social life because they generate indirect chains of social exchange as the result of conformity to normative obligations (Blau, [1964] 1996:259). Therefore, this research emphasizes the importance of examining both descriptive and injunctive norms in a group setting of student organizations.

Conceptualization of Norms

Definition of Norms

It is important to recognize the definition of norms before discussing the relationship between norms and behavior. So, what exactly are norms? Norms are widely viewed as informal social controls; however, scholars across different disciplines have different definitions and views on norms[4]. For some scholars, norms reflect actors' self-interest in eliminating negative externalities (Coleman, 1990), moral prescriptions for social behavior (Cooter & Ulen, 1988; Shudson, 2001), serve as solutions to the problem of coordination (Ullman-Margalit, 1977), or

[3] This research also recognizes the importance of individual-level constructs such as perceptions of cost-benefit evaluations on drinking and interpersonal communication patterns associated with drinking.
[4] It is not the purpose of this paper to discuss fully the types of and definitions of norms, though this paper recognizes the importance of distinguishing among different types of norms. I will use the term norms as an umbrella one to cover all types of norms in the remainder of this dissertation.

shapes social patterns in particular groups (Blur, [1964] 1996). For behaviorists such as Skinner (1970), norms are inferred as operant reinforcement. Fine, on the other hand, said that norms are meaningful and "constitute a 'frame' within which individuals interpret a given situation" (2001:140). In Table 1, I depict various definitions of norms from different scholars.

Homans (1961:124) distinguishes two kinds of norms by stating, "norm A, a statement of what people ought to do in a particular situation, and norm B, a statistical or quasi-statistical, average of what they actually do in that situation. Sometimes, the two coincide, but more often they do not.[5]"

Norms are more than just the patterns of typical or average behavior. The majority of scholars have widely recognized the notion that norms are statements or notions that regulate behaviors (see Horne, 2001b for discussion on definitions of norms). These statements therefore identify expectations (Bicchieri, 1997, Cancian, 1975). In other words, a given norm might mandate that one person ought or ought not to perform a behavior (Homans, 1961). Specifically, norms could be defined as "standards of conduct that are held to be right and proper for members of the group" (LaPiere, 1954:118), "standard (not necessarily explicit) for the course that actions should follow" (Williams, 1970: 413), or considered as ideas about behaviors that accompany identities (Cancian, 1975).

To take a step further to understand norms, some researchers suggest that norms are more than just rules, expectations or imperatives (see Bicchieri, 1997 & Voss, 2001 for more details). In order to distinguish the differences among different types of social rules, Bicchieri (1997) suggests that there are more conditions that need to be specified other than observable behavior, and normative beliefs to conceptualize or identify a norm. The conditions for a norm to exist depend on contingency, empirical expectations, normative expectations and normative

[5]These two kinds of norms are similar to injunctive and descriptive norms discussed earlier.

expectations and sanctions (see Bicchieri, 1997:11-16 for more details). Based on game-theoretical perspectives, Voss (2001) specifies social norms as a regularity in a population of actors such that this regularity arises in interactions among members, member prefers to conform to the regularity on the condition that most other members also conforms to that regularity, the members believe that almost every other member conforms, and the regularity is a Nash equilibrium for the recurrent interaction (2001:108).

Table 1: A Review of Definition of Norms

Authors (by years)	Definition of Norms
Sherif (1936:3)	"Customs, traditions, standard, rules, values, fashions and all other criteria of conduct which are standardized as a consequence of the contact of individuals."
Parsons (1937:75)	"Verbal description[s] of a concrete course of action, ... regarded as desirable, combined with an injunction to make certain future actions conform to this course. An instance of a norm is the statement 'Soldiers should obey the orders of their commanding officers'."
LaPiere (1954:118)	"Standards of conduct that are held to be right and proper for members of the group."
Hart (1961:85)	"A prescribed guide for conduct or action which is generally complied with by the members of a society"
Blake & Davis (1964:456)	"Norms designate any standard or rule that states what human beings should or should not think, say, or do under given circumstances"
Williams (1970:413)	"Standard (not necessarily explicit) for the course that actions should follow"
Skinner (1971:107)	"If you are reinforced by the approval of your fellow men, you will be reinforced when you tell the truth."
Cancian (1975:142)	"[N]orms [are] 'is' statements that define what identities exist and what actions and attributes validate them."
Fishbein & Ajzen (1975)	"Beliefs that certain referents think the person should or should not perform the behavior in question."
Axelrod (1986:1097)	"Exist in a given social setting to the extent that individuals usually act in a certain way and are often punished when seen not to be acting in this way."
Coleman (1990: 243)	"Concerning a specific action exists when the socially defined right to control the action is held not by the actor but by others...there is a consensus in the social system or subsystem that the right to control the action is held by others."
Wrong (1994:48)	"Expectations that arise concerning habits emerging and crystallizing in the course of repeated interactions might be regarded as latent norms."
Blau (1996:253, 255)	"Are the matrix that forms the social relations among groups and individuals" and "normative standards that restrict the range of permissible conduct are essential for social life."
Bicchieri (1997:10)	"Refer to behavior, to actions over which people have control, and are supported by shared expectations about what should/should not be done in different types of social situations."
Voss (2001:108)	"Behavioral regularities in a population of actors."
Horne (2001b: 5)	"Rules, about which there is some degree of consensus, which are enforced through sanctioning."

Perspective of Norms

Two principal schools of thought can be identified to explain the conceptualization of norms: structural and agency[6]. Though the distinction between these two perspectives is not difficult, it is nevertheless highly valuable. Structural perspective explains norms in terms of a set of institutional properties such as social status, group dynamics, patterns of relationship or network characteristics. On the other hand, the agency perspective focuses on norms in terms of individuals' perceptions, reasoning and interpretations. Drawing from theories of structure and agency in sociology and artificial intelligence literature, I illustrate these two distinct conceptualization of norms based on their respective images of the actors, characteristics of norms, concerned issues and unit of analysis (see Table 2). Further, I analyze the criticism of pure structural and agency views of norms and propose a need to integrate these two perspectives based on Giddens' theory.

Table 2: Structural and Agency Perspectives of Norms

	Structural view	Agency view
Characteristic	Externality force	Internal perception
Image of actors	Mindless, heuristic	Mindful, conscious
Unit of analysis	Group-level or large-scale	Individual-level or small scale
Mechanism	Social processes	Cognitive processes

Structural Perspective of Norms

The link between social structure and norms has been an important topic to many sociologists (e.g., Homans, 1950; Cook & Hardin, 2001; Voss, 2001). Merton defines social

[6] Here I use the terms of structure and agency instead of micro and macro-level because the concepts of agency-structure are not synonymous with those of micro-macro. Agency generally refers to micro-level or individual actors, but it can also indicate macro-level or collectivities of that action. Structure usually refers to large-scale social structures, but it can also indicate micro structures, such as those involved in social interaction. Thus, both agency and structure can refer to either micro-level or macro-level phenomena or to both (see Ritzer, 2000 for discussion on micro-macro and agency-structure).

structure as "that organized set of social relationships in which members of the society or group are variously implicated" (1968:216; italics added). Theories of structure emphasize that society is grouped into structurally related groups, sets of roles or series of component units and that the relationships between different entities or groups are enduring and relatively stable (see Waters, 1994 for review of theories of structure). Social phenomena, therefore, need to be understood as organized systems of relationships.

Several sociologists define norms as behavioral regularities generating expectations and supported by sanctions and as moral imperatives which entail a sense of oughtness (Hechter & Opp, 2001; Horne, 2001b; Voss, 2001). Rather than focusing on the internal state of oughtness, the majority of sociologists treat norms as external criteria for evaluations of behavior that are enforced through sanctioning (e.g., Coleman 1990). In other words, the fundamental view of the structural perspective is that norms constrain our behavior through the restrictions, obligations and expectations of actors, which are obeyed without deliberations. Therefore, actors are perceived as mindless and actors' expectations and obligations have nothing to do with mental states. Because of this emphasis on social structure, scholars who support this view investigate patterns of social processes instead of cognitive processes. They assume that behaviors and thoughts are influenced by the group to which we belong, and the pressures we experience from others. The unit analysis for the structural view of norms is generally at the group-level or larger-scale arrangement.

Criticisms of Pure Structural View

One of the advantages of structural arguments is their ability to recognize the constraints of structures and of coercive order at the group or societal level. Still, they suffer from the criticism of eliminating individuals' freedom. That is, pure structural theories tend to reduce

actors to mindless entities on the societal or aggregate level and fail to address the variety of agentic responses and complexities within social life (Manis & Meltzer, 1978; Waters, 1994). With regard to norms, the structural perspective ignores the individual-level mechanisms of adopting norms and says little about the content of normative rules or conditions of norms enforcement (see Horne, 2001b: 25 for the review of group-level models and norms). In addition, a great majority of sociologists pay more attention to the external component of norms because the traditional emphasis on the important influence of social structure on individuals. The sense of oughtness, an internal state, however, is conflated into an external component or externalities of norms. In fact, internal beliefs are often treated as a different or an independent construct, such as, value, that is not related to norms (Hechter & Opp, 2001).

Another criticism of the structural perspective comes from the assumption that structures are already known and can be known separately from daily life. Not only do theories of structure reduce all of human actions to the unconscious structure of mind, but they assume that the nature of collective phenomena is unconscious and universal[7]. However, human subjects do not always act in the predicted way of such structural views. These structural theorists attempt to answer all actions by predetermining structures across all societies and are consequently confronted with opposing empirical evidence of actions (Waters, 1994).

Agency Perspective of Norms

One of the key differences between the agency and the structural perspective on norms is their assumptions about actors. The fundamental view of the agency perspective is that actors are autonomous and are considered as intelligent and creative subjects who are, above all, in control

[7] Rational choice approach of norms has studied some aspects of both agency and structure and recognized the existence of individuals' goals and motivations, but they do not explicitly examine the conscious process of decision-making. For example, individuals' emotions, preference or cognitions are assumed to be captured in terms of received costs and benefits. See more discussed in the later section on the rational choice approach of norms.

of the conditions, which affect our social lives[8]. Rather than being constrained by norms, actors are able to decide whether to comply or adopt new norms, and to obey the authorities. Further, the agency perspective argues that human beings endow behavior with meanings and that our actions are based upon motivations. Sociologists who support theories of agency (e.g., symbolic interactionists and ethnomethodologists) insist that the substance of the social world is based on interaction, which is a constant process of negotiation of meanings by use of words, gestures and other symbols. Rather than theorizing enduring and large-scale structural arrangement, the agency perspective emphasizes descriptions and explanations of everyday social experience as based on the point of view of specific individuals or types of individuals.

Within norms research, scholars who support the agency perspective assert that norms influence our behavior but can never be taken for granted. Recently, scholars in artificial intelligence field particularly endorse the strong autonomy of actors (e.g., Conte & Castefranchi, 1999; López y López, Luck, & d'Inverno, 2005) and suggest that autonomous actors are not only able to act on norms but also they are able to reason about norms. Because of this interest in the internal state of actors, the agency-based perspective emphasizes cognitive processes in the sense that our memories, perceptions, thoughts, emotions, and motives guide our understanding of norms and actions. For example, perceived norms have been widely studied in communication (e.g., Rimal & Real, 2005) and public heath research fields (e.g., Neighbors, Larimer & Lewis, 2004). Empirical findings suggest that perceived injunctive and descriptive norms have been found to be an important influence on health behavior. In addition, research suggests that normative actors can represent, adopt and comply with norms but only through their motivations and goals (López y López, Luck, & d'Inverno, 2005).

[8]This view does not assume that human being will not make any random errors, but can make choices on their own.

Criticisms of Pure Agency View

The strength of the agency perspective of norms is in explaining individual and mutual interactive behaviors, but this approach suffers from the inability to address the apparently external, objective, and constraining realities of norms. The agency approach tends to focus on micro- or individual-level factors and to ignore contextual factors. That is, pure agency theorists ignore social situations or structures and reduce structures to an aggregation of interpersonal interactions and contents of the mind (Waters, 1994). For example, symbolic interactionists often ignore issue of social structure and ethnomethodologists practically deny its existence. Waters criticizes the weakness of symbolic interactionism by stating, "The contents of the minds of others are only accessible by self-reflection and by the projection of one's own experience on to the apparent experience of others" (1994:51).

In addition, recent and growing literature on perceived norms in empirical studies basically neglects the issue of social structures and has little to say about interactive behaviors at the group level. The main interest of such research lay not in its theoretical statements on norms but in its empirical findings. With the heavy focuses on perceptions or cognitions, the agency perspective on norms can only suggest an explanation at the level of motives but cannot validate that explanation (Waters, 1994). Therefore, while maintaining notions of individuals' freedom and voluntarism, pure agency perspective is unable to fully consider the unique characters and complexities of collective phenomena (Ritzer, 2001; Waters, 1994).

An Integrated View of Norms

Both the structural and the agency perspective on norms are useful in explaining the components of norms and the relationship between norms and decision-making. Drawing on the

theoretical framework from Giddens' Theory of Structuration (1984), this study conceptualizes norms as both "constraining and enabling" by considering both structural and agency perspectives of norms as an important foundation to explain behavior. The integration of structural and agency arguments is by no means novel. Giddens, for example, proposes social structures as both enabling and constraining (see Waters, 1994 for a review of theories of structure and agency). Structure is defined as "the structuring properties [rules and resources] ... the properties which make it possible for discernibly similar social practices to exist across varying spans of time and space and which lend them systemic form" (Giddens, 1984:17). Structure can only exist in and through the activities of human agents (Giddens, 1989:256). Rizter (2001:390) analyzes Giddens' assumptions by stating, "Rules and resources manifest themselves at both the macro level of social systems and the micro level of human consciousness." Therefore, the concept of *structuration* suggests that "[t]he constitution of agents and structures are not two independently given sets of phenomena, a dualism, but represent a duality ... the structural properties of social systems are both medium and outcome of the practices they recursively organize," or "the moment of the production of action is also one of reproduction in the contexts of the day-to-day enactment of social life" (Giddens, 1984:25, 26).

The enabling component of structure indicates offering a range of meanings, values and means that the actors can choose from when performing a behavior. These actors' choices, however, must be limited and highly constrained by social factors[9]. Therefore, both structure and agency cannot be conceived separate from one another. Giddens is perhaps the only agency theorist who has quite successfully attempted to integrate the ideas of agency and structure and

[9]Waters (1994), however, states that the terms of 'enabling' and 'constraining' have different meanings and actually contradict one another.

explains structures without conflating agency to structure.

I argue that structure is indeed located in instances of actions and located at the level of agency. On the other hand, I view individuals' actions as shaped by macro structures such as group norms, which constrain our behaviors. The argument here indicates that individuals are not entirely free when making a decision; nonetheless, individuals are the agency which reproduces the social structure. The structural perspective on norms can be strengthened by incorporating the agency perspective and vise versa.

Relationship between Norms and Decisions[10]

This section provides explanations on the relationship between norms and decisions by discussing the views of norm emergence and the assumptions of the norm-behavior link. Each assumption contains discussions on applied decision-making models and theories related to norms.

Emergence of Norms

Sociologists provide two general perspectives to explain the emergence of norms (Hechter & Opp, 2001; Hechter & Horne, 2003). One perspective suggests that norms reflect existing patterns of common behavior, similar to the arguments discussed earlier. Norms emerge when individuals observe a particular behavior more frequently, thus, a sense of oughtness is developed (Hechter & Horne, 2003:98). This assumption focuses on the frequency of a behavior or social condition that leads to individuals' evaluations of that behavior. The other perspective

[10]Although there are some similarities between this section and the concepts discussed in the section of conceptualizations of norms, here, in order to explain the norm-behavior relationship, I focus on norms and related concepts illustrated by specific theories and research models.

argues that people are concerned with external consequences from actions and from other people. Therefore, individuals will disapprove of harmful actions and encourage beneficial ones. Consequences of actions thus produce norms and individuals' behaviors based on the rationality assumption (see more discussion in the later section of rational choice of norms).

These two perspectives regarding the emergence of norms are important and useful in explaining the relationship between norms and behavior. This dissertation, however, provides alternative arguments to enhance these two perspectives by evaluating applied decision-making models related to the concept of norms across different disciplines including sociology, psychology, communication, and public health fields. My arguments here focus on the unit of analysis (individual or group level), cost-benefit evaluations (with or without) and the decision mechanism (mindful or mindless)[11]. I believe that these analyses will supplement sociologists' two general perspectives on the emergence of norms. The assumptions for explaining the norm-behavior relationship include: norms with deliberations and norms without deliberations.

Assumption of Norms without Deliberations[12]

As discussed earlier, the classic conformity literature demonstrates the strong impact of group norms on decision-making. This literature, however, assumes norms do not involve deliberations. That is, group norms determine our actions and this normative influence is not related to individuals' internal or cognitive processes. While some scholars emphasize individuals' perceptions in relation to norms, other scholars argue that these interpersonal or personal norms are mainly a function of group membership (e.g., Terry & Hogg, 1996). The

[11]The term of "mindless" does not mean that individuals have no thoughts at all, but tend to follow others' actions without considering much of the reasons.

[12]Although the structural perspective of norms assumes norms do not involve deliberations, the assumptions and models discussed in this section do not explicitly examine the structural features. Thus, I separate these two concepts and did not put the assumption of norms without deliberations in the section on the structural view of norms.

social identity approach (e.g., Terry & Hogg, 1996; Terry, Hogg, & White, 2000) changes the conceptualization of norms from interpersonal expectations to group-based rules or group expectations for behavior. Rather than considering interpersonal norms as independent predictors of behavior, group membership and identity are conceptualized as a construct with multiple indicators of both interpersonal and group norms. Within this view, individuals may identity with social categories without any interpersonal relationships among their members. For example, if a group of people in a city decide to support certain social movements, it may be useful to consider their mutual agreement as resulting from their common organizational identifications. In contrast, if some friends, for example, encourage abortion whereas others disagree with the idea, the inconsistent interpersonal norms may reflect conflicting religious affiliations rather than differences existing among group members.

The assumption that norms without deliberations can be observed is in the structural perspective of norms discussed earlier. The application of norms has been restricted to external properties rather than internal states due to the traditional focus on the structural view of norms in sociology (Hechter & Opp, 2001). For example, sociologists who are interested in norms have paid more attention to factors related to social status, patterns of relationships, group cohesion, strength of ties, network positions and so on without considering the individual-level variables explicitly. Fundamentally, the approach of norms without deliberation attempts to reduce human action to a single set of principles and assumes that global structure determines regional structure, which determines various levels of social formation. Therefore, individual-level variables are neglected and considered to be resulting exclusively from group-level variables. Individual-level costs and benefits perception and interpersonal norms are considered to be unrelated to decision-making

Because of the endorsement of group membership and of the social structural property, individuals' conscious activity of the mind, such as reasoning and cognitive process, therefore is viewed as unimportant to decision-making. In contrast with the rational process, this approach focuses on a mindless process of normative influence in that individuals change behaviors or attitudes in a situation where norms are in control without necessarily changing any internal reasoning such as cost-benefit evaluations associated with behaviors or outcome expectancies. This non-rational normative influence, however, may not be realistic and may produce incongruence between individual-level outcome expectancies and behavior (Louis, 2001). It is important to recognize these different processes of normative influence because it implies different relationships between norms and behavioral intentions.

Despite the fact that group or intergroup level variables are important to decision-making, many researchers have considered these variables as independent predictors of behavior rather than considering group-level variables as mediators (Kelly, 1993; Klandermans, 1984). For example, the assumption of identification associated with pro-group behavior is thought to be independent of any personal evaluations of that behavior. In group-related situations, however, the fact that identification influences a behavior may vary depending on other factors, such as the consequences for groups and for individuals (Brewer & Silver, 2000).

The argument of norms without deliberation assumes that conformity to group norms does not involve the process of interpersonal relationships nor does it develop through any rational or cognitive process and that decision-making is not mediated by individual-level variables, such as, outcome expectancies; therefore, it is not sufficient to explain decision-making behaviors in intergroup contexts (Louis, Taylor & Neil, 2004).

Assumption of Norms with Deliberations

Rather than assuming that individual's cognitive process or outcome expectancies are not important to norms, some scholars treat norms with deliberations and focus on a cognitive approach to the norm-behavioral relationship. Here, this section discusses two models including an individualistic model (i.e., Theory of Reasoned Action, Fishbein & Ajzen, 1975) and a group-level model (i.e., rational choice approach to norms).

Individualistic Models

Unlike the pure rationality assumption, some individualistic decision-making models do not assume a direct link between mental calculations of costs and benefits and decision-making (e.g., Ajzen 1985; Fazio, 1990; Fishbein & Ajzen, 1975). Instead, the concept of outcome expectancies[13], costs and benefits associated with behavior, is viewed to produce one global evaluation or attitude (i.e., Theory of Reasoned Action, Fishbein & Ajzen, 1975; see Louis, Taylor & Neil, 2004 for more discussion). Attitude, therefore, serves as a heuristic cue for material costs and benefits; and as a result, produces intentions to perform the behavior. Further, norms (subjective norms) are conceptualized as beliefs about the behavioral expectation of significant others, weighted by the motivation to conform to them and summed over all important others (Liska, 1984). That is, social costs and benefits associated with a particular behavior are internalized as subjective norms, which varies as a function of fulfilling or violating significant others' expectations (interpersonal norms), weighted by one's motivation to comply. Finally, the relationship between norms and behavior can be described as attitudes together with subjective norms which lead, via behavioral intentions, to decision-making in a model of theory

[13]Expectancy is defined as the subjective probability that either costs or benefits will occur when performing a behavior.

reasoned action. The notion of norms with deliberations implies the conscious process of normative influence. In other words, individuals use norms to evaluate themselves and others, with corresponding implications of outcome expectancies (i.e., costs and benefits judgments) and behavior.

One of the main criticisms directed at individualistic decision-making models is that decisions based on individual-level cost-benefit judgments operating without considering group-level constructs and social interaction related issues. The connection between individuals and broader social structures, therefore, is neglected (Kippax & Crawford, 1993**)**. For example, behavioral intentions are mainly determined by three independent individual-level factors: attitudes, subjective norms and perceived behavioral control in the theory of planned action. Another crucial weakness in these individualistic models comes from the conceptualization of norms. Subjective norms in Theory of Reasoned Action (Fishbein & Ajzen, 1975) are limited to a consideration of an individual's perception of social phenomena or treated as personal cognitions; thus, they are reduced to another form of beliefs without much association with broader social aspects. In other words, a subjective norm is a matter of personal preference or the norms of society in which that person believes. The conceptualization of norms as an internal force rather than an external one is not well explained. According to several sociologists' views (e.g., Coleman, 1990), it is important to treat norms as an external characteristic and the construct of norms should be understood through the complete explanations of the content, enforcement and distribution of norms (Horne 2001b).

In addition, a few scholars have questioned the theoretical soundness and aggregate nature of subjective norms as global social pressure (e.g., Johnston & White, 2003; Terry & Hogg, 1996, 2001; White, Terry & Hogg, 1994). Subjective norms in Theory of Reasoned

Action (Fishbein & Ajzen, 1975) do not specify significant referent others and the construct of significant others' expectations are aggregated. Finally, the construct of subjective norms contains the concepts of social costs and benefits associated with behaviors (i.e., outcome expectancies), yet, this cost-benefit reasoning is not treated and measured separately from subjective norms; rather, they are aggregated together. This consideration underestimates the power of norms on cost-benefit reasoning and decision-making and on the process of individuals' cost-benefit evaluations associated with behavior (Louis, Taylor & Neil, 2004). Individualistic decision-making models are useful to analyze the micro-level of the attitude-behavior and the norms-intention relationships, however, at the macro level, the influence of norms arrived at by consensus affecting the extent to which individuals are socialized, interact and cooperate is neglected in these individualistic models.

Rational Choice Approach of Norms

Recognizing the importance of micro and macro levels, the rational choice approach and the game-theoretical approach to norms (e.g., Axelrod, 1986; Bicchieri, 1990; Ullman-Margalit, 1977) explains the link between norms and decision-making. For example, Coleman (1990) illustrates why and how norms exist based on rational choice theory, while most sociologists take norms as given. The rational choice approach to norms insists that norms are initiated and enforced by the benefits of complying with norms and costs stemming from the violation of norms. One of the key assumptions is that actors are purposive and have ends or goals to their actions. Actors will maximize their desired outcome at the least cost. Within Coleman's (1990) approach, the analysis of norms is based on three key elements – micro to macro, purposive action at the micro-level and macro to micro (see Ritzer, 2000 for more details). In other words,

norms are macro-level phenomena existing at the micro-level of purposive action. Norms affect individuals' behavior through sanctioning.

The strength of rational choice approach is its ability to develop formal, propositional, often mathematical, models of human behavior in certain social situations and the ability to consider both human agency and structural levels (Ritzer, 2000; Waters, 1994). However, the rational choice approach to norms suffers from three main weaknesses, thus, it is not sufficient to explain the mechanism of norms and decision-making. Here are the summarized arguments:

1. Rational choice approach of norms recognizes the importance of actors' goals, preferences or utilities, but it is not concerned with what are these preferences are or their source (Ritzer, 2000; Waters, 1994). For example, this approach does not examine the cognitive factors associated with norms such as motivations, perceptions, communications, and meanings. Actors' means/end (or cost-benefits) reasoning is conflated into the construct of norms and never explicated assessed. Further, if norms are based on some cost and benefit judgments, where did that reasoning come from? And what is the process of leading to assessment of an action to the process of coordination? These questions are not addressed clearly (Conte & Castefranchi, 1999). This issue of ignoring cognitive process at the individual level leads to the following weakness.
2. The causal relationship between micro and macro goes in only one direction in rational choice models and these models ignore the dialectical relationship between and among micro and macro phenomena (Ritzer, 2000: 298). For example, most empirical models only test the effect of group-level conditions of norms on individual attitudes and behavior without overtly assessing individual-

level variables. Without explicitly assessing those individual-level variables, the issue of micro-macro interaction is not completely addressed in that individual-level constructs could also influence group-level ones. As a result, norms are viewed as constraints of behaviors without individuals' autonomy.

3. Within the rational approach, it is not clear the mechanisms of adopting norms through imitating of other's behavior based on pure conformity, based on only typical means/end without conformity or the combination of both. An action based on means-and-ends reasoning is not always normative. In addition, norms can be adopted through imitation of other's behavior without much internal judgments as those assumptions in classic conformity (e.g. Asch, 1951; Milgram, 1974; Sherif, 1935, 1936). The rational choice approach of norms does not clearly address these mechanisms. Although norms are considered as both the phenomenon of rational (self-interested) and conformity behavior in the rational approach, norms are mainly viewed and modeled as the effect of actors' rationality. In other words, the rational choice approach confuses the conformity and utilitarian explanations (see Conte & Castefranchi, 1999 for more details). This problem may come from the fact that the rational choice approach neglects the mechanisms of norms adoption and the process of conformity by failing to address certain mediators between the relationship of norms and decision-making.

Summary

The assumptions of norms with deliberations and norms without deliberations discussed here are useful to point out different characteristics of norms and to explain different processes

of the norms-intention relation. Each of these two assumptions, however, has some weaknesses that do not address fully the mechanisms of adopting norms. The notion of norms without deliberations approach mainly ignores individual-level variables and the reasoning and cognitive process associated with norms. It assumes a direct link between group-level conditions of norms and decision-making and a mindless process of normative influence. On the other hand, the assumption of norms with deliberations neglects group-level variables by focusing on the perceived or internalized norms. Although assumed individual's rational reasoning related to norms and behavior, the notion of norms with deliberations conflates individuals' cost-benefit evaluations with the construct of norms. It does not explicitly assess individual's rational and mindful processes associated with decision-making and norms. Most importantly, both views neglect the deliberative process of norms. What is the deliberation process? Where do cost-benefit judgments come from? What is the relationship between the two phenomena of norms and cost-benefit analysis, if any? How are norms understood and enforced by group members? In the following chapter, I propose theoretical arguments, relevant hypotheses and an integrated model to answer some of these questions and to explain three important components of norms: norm mechanism, norm transmission and norm enforcement.

CHAPTER THREE

THEORETICAL ARUGMENTS AND HYPOTHESIS

Chapter Overview

This chapter details theoretical arguments and hypotheses that are related to the mechanism, transmission and enforcement of norms. Before proposing arguments for my proposed model, several basic assumptions for this research are discussed. For explaining norm mechanisms, Giddens' (1984) Theory of Structuration is used to conceptualize group norms, but then Bandura's Social Learning Theory (1977) and Social Cognitive Theory (1986) is adopted to illustrate the specific mechanism of normative influence on health decision-making. Most importantly, cost-benefit evaluations are proposed to mediate the relationship between norms and behavior. For norm transmission, I argue that interpersonal communication plays an essential role in the transmission of norms based on Rogers' (1983) Diffusion of Innovation and theoretical arguments from communication scholars. For norm enforcement, this research draws insights from sociologists' research on the relationship between social sanctions and norms and applies them to health research. Specifically, social rewards and social punishment are assumed to mediate the norm-behavior relation. Finally, a conceptual model for the various hypotheses is presented in the end of this chapter.

Assumptions of This Study

Individual Actors

Individual actors are assumed to be self-interested and intentional in this study. If given choices, actors may choose to maximize benefits and minimize costs, according to rational

choice assumption. Individuals make decisions that benefit themselves and the groups that they belong to. Instead of implicitly assuming actors' rational and self-interested characteristics, this study explicitly assesses actors' rational judgments associated with behaviors arguing that actors do not blindly copy other's behaviors. Instead, actors may make judgments or comparisons on costs and benefits associated with actions before they make a decision.

Conceptualizing Group Norms

As discussed earlier, this study argues that group norms are an important source of norms for analyzing the impact of norms on behavior and conceptualizes norms as both enabling and constraining (Giddens, 1984). That is, norms constrain individuals behaviors, however, enables action by providing common frames of meaning. Accordingly, the integration of the structural and agency views of norms is proposed to explain the decision-making model. Social norms define an indirect exchange relationship between individuals. Thus, group norms reflect the fact that group members receive social approval in exchange for conformity and "the contribution to the group their conformity to social expectation makes" according to Blau ([1964] 1996:259).

Based on several sociologists' views of norms, group norms are defined as social standards, expectations and approval from group members enforced through sanctioning. This definition reflects the concept of "oughtness" that is widely accepted by scholars and contains components of prescription, proscription or permission for a behavior (Horne, 2001b). On the other hand, group norms should reflect judgments associated with behaviors because norms are shared through social interaction. Within this view, norms become enabling because of the process of an individual's mindful judgment and choices.

Unit of Analysis

In order to conceptualize norms as both enabling and constraining, I argue that norms should be studied at both the individual- and group-level. For example, this study recognizes the importance of both individual- and group-level conditions related to decision-making. Descriptive and injunctive group norms and social sanctions are conceptualized at the group-level, and perceived cost-benefit and communication patterns are assessed at the individual-level in this study. The setting for the unit of analysis is individuals within groups. This study does not attempt to explain intergroup relationships and the interaction of ingroup and outgroup norms. Future research could consider the influence of outgroup norms in intergroup conflict situations.

Relationship between Intention and Behavior

This study asserts that attitude and behavior are related, and that behavioral intention serves as an indicator for behavior or decision-making. As Kahle and Berman (1979) point out, there are four possible relationships between attitudes and behaviors: attitude causes behaviors (McGuire 1976), behaviors cause attitudes (Bem 1972), reciprocal causation (Kelman 1974), and no relationship between attitude and behavior (Wicker 1969)[14]. The present research does not specify the causal relationship between attitude and behavior, but only assumes that these two concepts are associated. Fishbein and Ajzen's (1975) Theory of Reasoned Action argues that behavioral intention serves as a function of both attitudes toward a behavior and subjective norms toward that behavior, which predicts actual behaviors. Along this line, this study suggests that behavioral intention predicts individuals' behavior.

Behavior is assumed to be under conscious and volitional control; therefore, this

[14] Attitude and behavior, however, can also operate simultaneously.

assumption does not apply to actions that are presumably not under continually conscious processing[15]. In addition, no inconsistency is expected in the relationship between intention and behavior because each of the variables in the proposed decision-making model is a particular manifestation of attitude in the underlying "for or against" sense. In other words, this study argues that students either approve or disapprove drinking behavior. The net valence of behaviors toward an object should be consistent with the overall valence of the attitude and consistent with actual behavior. Future research could investigate the topics of intention-behavior inconsistency and attitude-behavior inconsistency in order to have a broader understanding of relationships among behavior, intention and norms.

Mechanism of Norms

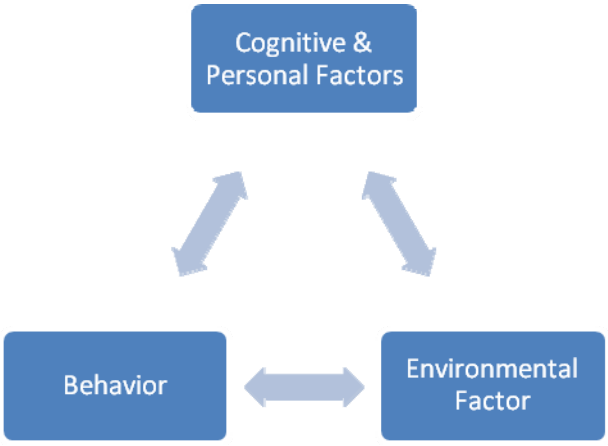
Social Learning Theory and Social Cognitive Theory

In order to analyze the mechanism of normative influence and examine norms as both enabling and constraining of behavior, this dissertation uses Bandura's Social Learning Theory (SLT, 1977) and Social Cognitive Theory (SCT, 1986) to hypothesize the mechanism of norms on behavior by proposing cost-benefit judgments as the mediator between norms and intention and between norms and behavior. SLT asserts that a behavior is explained in terms of a three-way, dynamic reciprocal determination in which personal factors, environmental influence and behavior continually interact. One of the important assumptions of SLT is that people not only learn through experience or mistakes, but learn by observing others' actions and the results of those actions (see Glanz, Rimer & Lewis, 2002). Based on the framework of SLT, Bandura later

[15] However, we cannot tell if some actions are under conscious process sometimes.

developed SCT (1986) by adding the construct of self-efficacy. SCT supports the behaviorist notion in the way that behavioral consequences determine behavior, but argues that behaviors are largely regulated through cognitive processes. Human mind is an active force that constructs one's perceptions, encodes information and performs behavior based on beliefs and expectations and imposes social structure (Bandura, 2001). In the model of SCT, personal factors in the form of cognitive, affective, and biological events, behavioral patterns and environment influence one another bidirectionally (see Figure 1). In addition, cognitions change over time as a function of maturation and experiences such as attention span, memory, the ability to form symbols, and reasoning skills.

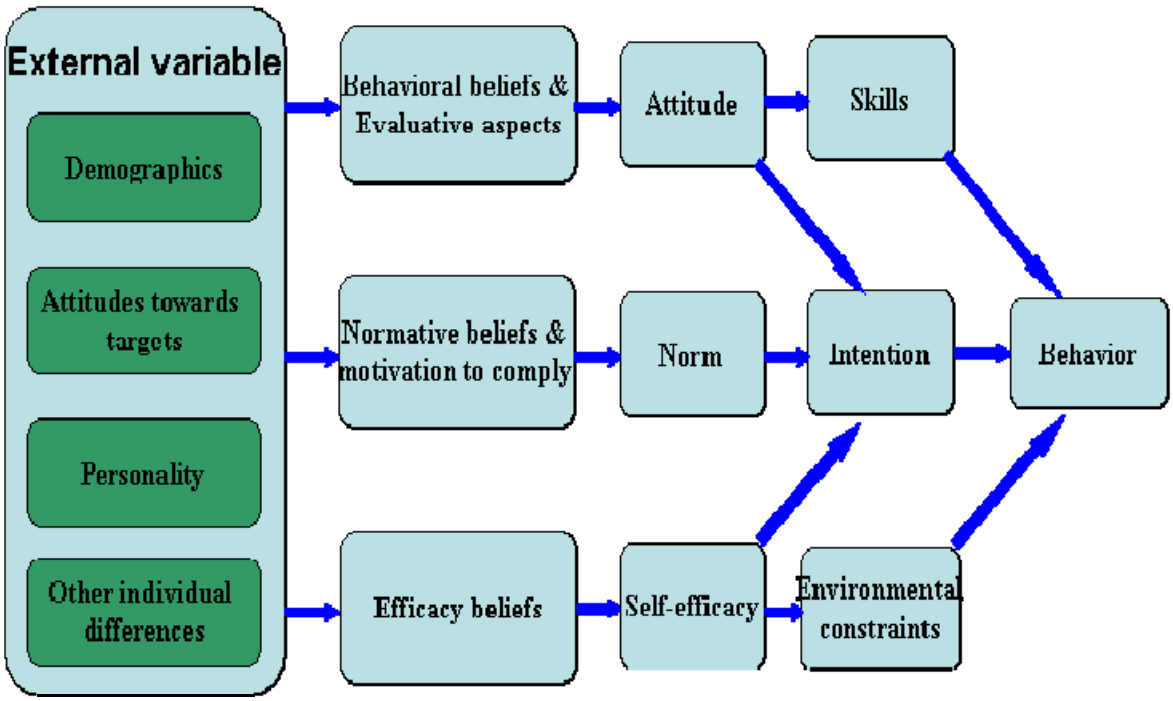
Figure 1 Triadic Reciprocal Determinant of Attitude and Behavior



Specifically, four main factors in SCT are assumed to affect behavior: (1) self-efficacy: confidence in one's ability to act and overcome barriers and is perceived as the most important factor, 2) behavioral capability: knowledge and skill to perform a behavior, 3) expectations: anticipated behavioral consequences and 4) reinforcements: responses to behavior that influence the likelihood of reoccurrence. One of the assumptions in SCT suggests that it is the ability to

form outcome expectations that give individuals the capability to predict behavioral outcomes, before the behavior is performed. Figure 2 illustrates specific factors that lead to behavior in SCT (adopted from Glanz, Rimer & Lewis, 2002).

Figure 2 Social Cognitive Theory (adopted from Glanz, Rimer & Lewis, 2002)



Similar to Giddens (1984), Bandura also emphasizes the interdependency of both personal agency and social structure in the way that individuals are proactive and reflective in making choices, but their behaviors are heavily dependent on the types of social and physical environments. Supporting Giddens' ideas, Bandura (2001) states, "Social structures represent authorized systems of rules, social practices, and sanctions designed to regulate human affairs… These sociostructural functions are carried out by human beings occupying authorized roles" (14). A comprehensive theory, according to Bandura (2001:5), must integrate personal and social foci of causation within a causal structure. Therefore, SCT integrates concepts from cognitive, behaviorist, and emotional models of behavior change[16].

SLT or SCT have been successful at explaining and predicting individuals' behavior in various areas such as health-related research. For example, the factor of self-efficacy is found significant in reducing health risk or changing health behavior because self-efficacy influences people to sustain the effort needed to adopt and maintain healthy behavior (Bandura, 1998). Empirical studies demonstrate that perceived self-efficacy influences individuals' behavior in coping with cancer (Merluzzi & Sanchez, 1997), decreasing the risk of osteoporosis through physical activity and increased calcium intake (Horan et al., 1998), reducing cholesterol through dietary means (McCann, et al., 1995) and adherence to the HIV treatment (Johnson et al., 2007).

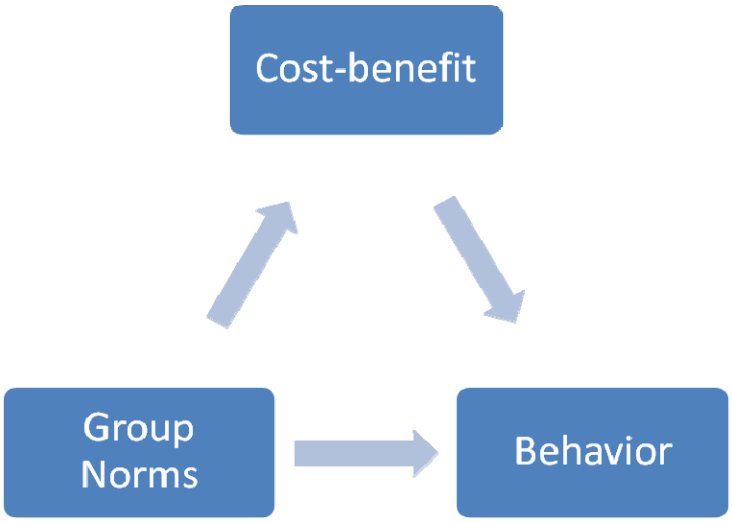
Bandura's emphasis on both agency and structure reflects on his statement "people are producers as well as products of social systems" (2001:15). Yet, many scholars pay more attention to agency or individual-level factors in Bandura's theories. That is, the majority of empirical studies using SLT or SCT framework are doing a successful job in explaining individual-level factors such as self-efficacy, self-regulation or outcome expectancies associated with health decision; however, they fail to address the important role of environmental factors in

[16]Many behaviorists; however, reject the concept of causation.

the reciprocal relationships. In other words, the connection between personal and environmental factors or environmental factors and behavior is often neglected in the empirical studies. SLT or SCT would be a suitable decision-making model to explain human health behavior if we could test personal, environmental factors and behavioral patterns together in one model.

Based on SLT and SCT theoretical framework discussed earlier, this research considers cost-benefit judgments as personal factors, group norms as environmental factors and drinking habits as a behavioral pattern in explaining the mechanism of normative process on health decision-making (see Figure 3). Human health behavior is heavily influenced by both lifestyle habits and environmental conditions; therefore, it is important to address the influence of environmental factors on individuals' health patterns and behavioral change.

Figure 3 Relationships among Norms, Cost-benefit Judgments and Behavior



Importance of Intermediate Phenomena

Sociologists have traditionally paid greater attention to the structural view or group-level characteristics of norms than to the agency or individual-level view of norms. Perhaps conceptualizing structural or group-level characteristics of norms in terms of the costs and

benefits of behavior is one way of integrating individual-level variables (Horne, 2001b). But, how can this approach be accomplished? Instead of assuming a direct link between norms and behaviors or implicitly assuming that norms contain the cost-benefit judgments as proposed in the rational choice approach of norms, this dissertation argues for the importance of analyzing intermediate phenomena between norms and behavior such as cost-benefit judgments in order to avoid conflating individual- and group-level variables.

An analysis of the intermediate phenomena between norms and behaviors is important because the process from norms to behaviors, while not continuous, is also not all-or-none (Conte & Castefranchi, 1999). Specifically, individuals' perceptions and judgments associated with actions are perceived as mediators in this research's proposed norms-intention model. This mediator indicates that the norms-behavior relation cannot be well established without the construct of individual-level judgments. As discussed earlier, group norms influence individuals' perceptions and decision-making due to the structural component of norms. Norms, however, cannot influence behaviors without the process of individuals' judgments because actors are not totally mindless in terms of making decisions. As a mediator, cost-benefit judgments link the relationship between norms and behaviors. The underlying assumptions are that group norms are perceived to have rational implications for cost-benefit evaluations on behaviors and indirectly motivate our behaviors by shaping individuals' perception of consequences.

This rational judgment process as a mediator is important because we can better understand how norms influence our decisions. Since this research assumes that actors are those who can actively define their situations in order to make a decision, a mindful and rational mechanism of normative influence is assumed to specify individuals' decision-making. Instead of automatically endorsing the consequences of behavior, individuals may systematically judge

those consequences. Therefore, the norm-behavior link cannot be fully explained without knowing these individuals' means and ends reasoning.

Several norms-behavior models have either ignored or aggregated cost-benefit evaluations into the concept of norms and do not measure these two concepts independently. For example, cost-benefit evaluations (i.e., outcome expectancies) are aggregated into subjective norms in Theory of Reasoned Action (Fishbein & Ajzen, 1975). In addition, the rational choice approach of norms asserts that the cost-benefit of behaviors generates norms without explicitly addressing the concepts of costs and benefits. Thus, separating the cost-benefits evaluations from the construct of norms in this study's proposed model will provide a better understanding of the mechanism of norms without conflating cost-benefits into the concept of norms.

Although separating the notion of cost-benefit evaluations from norms is sufficient for explaining the mechanisms of norms and behavior, it should not be treated as an independent predictor of decision-making. Several decision-making models have treated cost-benefit evaluations and norms as separate predictors of behavioral intention; however, this assumption tends to underestimate the power of norms (Louis, Taylor & Douglas, 2005). In other words, cost-benefit evaluations as a mediated role of norms and behavioral pattern will elucidate the influence of norms. Specifically, group norms influence individuals' judgments or outcome expectancies, which in turn may influence one's behavioral intention toward making a decision. Group norms influence behavioral intention not directly, but by reinforcing the perception of cost and benefit associated with one behavior. Based on the previous literature, this study proposes:

> *H1a*: *Group norms that approve drinking increase the level of perceived benefit of drinking.*

H1b: Group norms that approve drinking decrease the level of perceived cost resulting from drinking.

H2a: Perceived costs of drinking decrease levels of drinking intention and behavior.

H2b: Perceived costs of drinking mediate the relationship between group norms and drinking intention. That is, group norms have a direct effect on perceived cost and an indirect effect on drinking intention through perceived cost.

H2c: Perceived costs of drinking mediate the relationship between group norms and drinking behavior. That is, group norms have a direct effect on perceived cost and an indirect effect on drinking behavior through perceived cost.

H3a: Perceived benefits of drinking increase levels of drinking intention and behavior.

H3b: Perceived benefits of drinking mediate the relationship between group norms and drinking intention. That is, group norms have a direct effect on perceived benefit and an indirect effect on drinking intention through perceived benefit.

H3c: Perceived benefits of drinking mediate the relationship between group norms and drinking behavior. That is, group norms have a direct effect on perceived benefit and an indirect effect on drinking behavior through perceived benefit.

Evaluations of Social and Health Effect of Alcohol

Cost-benefit evaluations are considered as an individual's judgments that alcohol consumption has certain positive or negative effects. The relationship among norms, cost-benefit evaluations and decision-making has been examined by several social psychologists (e.g., Louis, Taylor & Douglas, 2005). This research, however, proceeds one step further to distinguish the difference between cost and benefit evaluations on behaviors. Many studies do not separate the difference between cost (i.e., negative) and benefit (positive) evaluations nor do they distinguish which types of evaluations would be most critical to explain the norm and behavior relation. For example, several decision-making models (e.g., Theory of Reasoned Action, 1975) combine the positive and negative evaluations into a single bipolar construct. This single bipolar assessment

becomes the examination of only a single outcome behavior and it is not clear which aspect of cost-benefit evaluations actually influence decision-making.

With regard to drinking behavior, evidence shows that positive and negative alcohol expectancies have specific and distinct influence on drinking-related behavior (Stay, Widaman, & Marlatt, 1990). Positive expectancies might lead individuals to start drinking whereas negative expectancies limit quantity consumption (Lee et al., 1999). Distinguishing the valence between positive and negative expectancies, however, may not be sufficient to explain decision-making because people hold different motivations for performing a behavior and conform to a group norm for different reasons. For example, a person may conform to a group to be accepted and to avoid rejection; or to obtain correct information (Deutsch & Gerard, 1955). Therefore, considering different types of outcome expectancies or evaluations on behaviors is another important step in understanding why people conform to group norms and to make decisions.

Within the alcohol consumption context, drinking motivations may include enhancement (i.e., to enhance physical or emotional pleasure), coping (i.e., to avoid or minimize negative emotions) and social reinforcement (i.e., to enhance enjoyment of a social occasion or to facilitate social interaction) (see Cooper, Frone, Russell & Mudar, 1995; and see Read, et al., 2003)[17]. Evidence shows that college students mainly use alcohol for social reasons and perceive that alcohol enhances social interaction rather than using alcohol for coping with negative emotional states (e.g., Stewart, Zeitlin & Samoluk, 1996). Distinguishing different valence and types of judgments on alcohol consumption is necessary because we can assess specific drinking

[17] Scholars have distinguished differences between the concepts of motives and outcome expectancy. Drinking motives refers to the need or psychological function that alcohol consumption fulfills (Cooper, Frone, Russell & Mudar, 1995) whereas alcohol expectancies refer to the likelihood and/or value of specific behaviors thought to occur with drinking (Jones, Corbin & Fromme, 2001). Some suggest alcohol outcome expectancy is linked to and predicts motivation of drinking (Read et al., 2003) whereas some suggest that motives are more proximal than expectancies (Neighbors et al., 2007). Social expectancies and motives, however, are considered all aspects of the same global construct for social evaluations on drinking.

expectancy-value processing associated with drinking behavior. This analysis will provide a much clearer picture of how group norms influence a specific effect of alcohol beyond just measuring a global evaluation of alcohol consumption. Specifically, this study hypothesizes the following statements regarding the relationships among group norms, sociability, tension reduction and behavioral impairment based on Ham et al.'s (2005) Brief Comprehensive Effects of Alcohol Scale (B-CEOA):

> *H4a: Group norms that approve drinking increase the level of evaluating the social effect of alcohol as a good thing.*
>
> *H4b: Group norms that approve drinking increase the level of evaluating the tension reduction effect of alcohol as a good thing.*
>
> *H4c: Group norms that approve drinking decrease the level of evaluating the behavioral impairment effect of alcohol as a bad thing.*
>
> *H4d: Evaluation of social effect of alcohol as a good thing increases levels of drinking intention and behavior.*

Enforcement of Norms

Importance of Social Sanctions

The concept of norm enforcement must be explained in order to fully understand norms (Horne, 2007). Scholars suggest that the role of social sanctions in norm enforcement is essential (e.g., Coleman, 1990; Durkheim, 1952; Ellickson, 1991; Homans, 1961; Parsons, 1952; Scott, 1971; Ullmann-Margalit, 1977; Yamagishi, 1995). Because of the component of sanctions, norms are distinct from other similar concepts such as values, beliefs, meaning, and morals and so on. For norms to exist and be effective, a group must have the ability to enforce its rules and translates group rules into actions (Hechter & Horne, 2003: 135). Norms, therefore, become

effective through the process of social sanctions. Sanctions are distinct from norms, though these two concepts are related. It is important to untangle the concepts of norms and sanctioning and to conceptualize these two terms differently (Hechter & Opp, 2001), which is one of the main arguments in this research. A social sanction can be defined as a punishment or reward enacted on the basis of social agreement that an action ought (or ought not) to occur (Epstein, 1968).

Consistent with the views in the conformity literature (e.g., Asch, 1951; Sherif, 1935, 1936), this study argues that people care about sanctions because of the desire for gaining social approval and making correct choices (Deutsch & Gerard, 1955). Therefore, expecting rewards and avoiding punishment are viewed as the motives for self-interested actors to participate in many socially desirable behaviors (Bandura 1977; Gouldner 1960; Reno, Cialdini & Kallgren 1993; Opp 2002). Other scholars, however, insist that group welfare (Ellickson, 1991), group interdependence (Horne, 2007), emotional motives (Fehr & Gaähter, 2002) or reinforcement (Skinner 1938) produces sanctioning.

Social Sanctions in Health Research

The concept of sanctions has been widely recognized in the disciplines of sociology, criminology and law, but scholars in health communication and public health fields have not paid much attention to the relationships among norms, sanctions and health behavior. A few scholars, however, have investigated on the concept of social sanctions in health behavior. For example, Gleason, Alexander and Sommers (2000) studied the effects of long-term teasing on the body image of adolescents and found that teasing about competence, appearance and weight all affect women's long-term self-esteem and body image. Moreover, competence teasing and appearance teasing are found to be correlated with the occurrence of body dysmorphic disorder

(i.e., excessive concern about imagined or slight defects in their appearance). Similarly, Lunde, Frisen, and Hwang (2006) investigated bullying as another form of social sanctioning in peer groups and found the bullying negatively impacts the body esteem of school boys and girls. Therefore, teasing and criticism are important sources of social sanctioning as they create negative emotions about one's body image and may promote dieting.

In the area of risky behaviors, the impact of informal sanctions (e.g., social disapproval) on college students' marijuana use (Anderson, Chiricos, & Waldo, 1977) and alcohol consumption (Lewis & Thombs, 2005) are found to be relatively stronger than formal sanctions (e.g., severity of punishment, regulations). For example, not drinking at college social functions is considered as an unusual behavior (Rabow & Duncan-Schill, 1994) and abstainers receive less social approval than moderate drinkers (Trice & Beyer, 1997). Because of being in fear of negative social sanctions, students may match their behaviors with perceived approval from others (Schroeder & Prentice, 1998).

Although alcohol researchers have gradually recognized the role of sanctions in drinking behavior, to my knowledge, the concept of social sanctions has not been investigated explicitly. That is, the concepts of norms and sanctions are often conflated together into three elements: behavior, oughtness and sanctions (see Hechter & Opp, 2001 for a review). Many researchers assumed that norms automatically reflect the component of sanctions and need not be measured differently from sanctions. For example, the factor of social sanctions has been broadly conceptualized as the concepts of peer pressure (Graham, Marks & Hansen, 1991), social motives (Cooper, 1994) or social lubrication outcome expectancies (Read at al., 2003) without considering both rewards and punishments associated with sanctions or disentangling norms from sanctions. Most importantly, the relationships among norms, sanctions and drinking

behavior are not clearly addressed. That is, empirical studies either focus on the norms-behavior relation or the sanction-behavior relation. This research recognizes the role of social sanctioning in the enforcement of norms and combines both the components of rewards and punishments generating from group norms in the decision-making model in order to suggest a solution to the key issue of norms, sanctions and behavior.

Formal and Informal Sanctions

The primary sources of norm enforcement include informal sanctions, the formal legal system, and other types of social control, such as, trust, internalization of norms, and so on (see Horne, 2001b). This research argues that informal social sanctioning can be an effective force to predict human behavior. While the power of the formal legal system protects our civil rights, informal negative sanctions may have greater deterrence influence than legal sanctions (Anderson, Chiricos, & Waldo, 1977; Noussair & Tucker, 2005). Violating a norm may be punished on an informal level such as being stigmatized or ignored by group members through the mechanisms of refusal of social approval, gossip, physical retaliation, ostracism (Diekmann & Voss, 2003). Some researchers argue (e.g., Tyler, 1990) that social pressure or sanctioning is the main reason that laws are obeyed rather than the view of being punishment for noncompliance. In addition, evidence demonstrates that formal sanctions may not deter individuals from committing non-healthy or risk-taking behaviors, but informal sanctions may do so. For example, a common assumption is that legal sanctions discourage people from committing future drinking-driving offenses, but several studies argue that people with alcohol problems perform multiple acts of drinking and driving regardless of the severity of legal punishment they have experienced (e.g., Yu, Evans, & Clark, 2006). Further, a recent study

(Lewis & Thombs, 2005) suggests that normative beliefs about close friends' drinking practices are more closely associated with alcohol consumption behavior than perceived legal punishments of drinking. These arguments demonstrate the power of informal sanctions in our daily life.

Rewards and Punishments

Both rewards and punishments are important aspects to understand social sanctioning. While some sociologists (Blau, 1964; Homans, 1974) explicitly excluded the component of punishment from the scope of social exchange because punishments were considered not effective and harmful (See Molm, 1997:44-45 for a review,)[18], some scholars consider that both rewards and punishments are important to determine behaviors and social relations (Gray & Tallman, 1984; Molm, 1997). Negative sanctions impose cost whereas rewards confer benefits (Molm, 1997: 68). Human choices involve the relative costs and benefits of alternatives in decision- making (Gray & Tallman, 1984, Gray, Stafford, & Tallman 1991)[19]. Gray and Tallman (1984) indicate that although the decision-making process is not entirely based on reward maximization or cost minimization, choices that received the greatest amount of rewards will be most frequently chosen. On the other hand, human also learn from mistakes when receiving positive or negative punishment[20]. Molm (1997:47) also claims "all social relations involve, from time to time, a mixture of reward and punishment." The use of rewards and punishments needs to be conceptualized differently because actors may not perceive them identically. It is important to recognize two different perspectives on rewards and punishments: actual behaviors

[18]For example, Homans ([1961] 1974:26) stated that "The use of punishment is an inefficient means of getting another person to change his behavior: it may work but it seldom works well." Blau ([1964] 1996:224) also argued that punishment "arouses emotional reactions that have undesirable consequences for behavior other than the one it is intended to affect."

[19]Gray and Tallman (1984) argue that human choice is a function of the ratio of expected satisfaction resulting from the discrimination made between alternatives and the dissatisfaction from that discrimination.

[20]According to behaviorism, basic paradigms of reinforcement and punishment that are related to behavior include: positive reinforcement, negative reinforcement, positive punishment, and negative punishment.

of punishing and rewarding others, and perceptions of rewards and punishments received from others.

The sources of sanctions could come from internal or external states. Elster (1989) distinguishes differences between guilt, an internal kind of pressure and shame and an external kind of social pressure. Both internalized norms and internalized sanctions are important, social sanctions, however, must be generated outside of individuals to be effective (Axelrod, 1986; Coleman, 1990; Homans, 1950:123; Scott, 1971)[21]. For example, Axelrod (1986: 1097) states, "a norm exists in a given social setting to the extent that individuals usually act in a certain way and are often punished when seen not to be acting in this way." Some suggest that even internalized norms must rely on external sanctions (Parsons, 1952; Scott, 1971). In other words, social norms take place when an action produces positive or negative consequences for group members. These external consequences focus on the reactions of others and are viewed as effective sources of informal sanctions in this study. In other words, perceived punishments and rewards from group members influence an individual to decide to consume alcohol.

Relationships among Norms, Sanctions and Behaviors

Social norms influence both individuals' sanctioning decisions and pro-social behaviors. The higher a group's expectations is, the greater this group's need for power and the greater pressure will be on the group members regardless of social norms of justice (Blau, [1964] 1996). For example, members in a highly cohesive group are more concerned with their membership and are more strongly motivated to contribute to the group benefits and participate in-group activities in comparison with those in a less cohesive group. Empirical evidence shows that

[21] Coleman (1990) suggests that norms become internalized when people accept them as legitimate. Individuals who internalized norms may generate their own fear of sanctions without actual threatening or teasing behaviors from others.

injunctive norms in approving drinking behavior are particularly influential in students' drinking decisions within Greek systems given the strong focus on unity, social approval and identification with Greek houses (Arnold & Kuh, 1992; Larimer et al., 1997). Adherence to these injunctive norms becomes a means of maintaining social support (Terry & Hogg, 1996). Therefore, both norms and meta-norms (i.e., norms of sanctioning) are likely to develop in a cohesive group (Ellickson, 1991; Horne, 2001a). Most importantly, norms tend to be developed in a cohesive group or community because members tend to sanction deviant members (Hechter & Kanazawa, 1993; Homans, 1961; Sampson, Raudenbush & Earls, 1997)[22]. Violating a rule over which there is strong degree of consensus within the group leads to members' sanctioning decision. Therefore, where a group norm is stronger, the norms of sanctioning become stronger. In addition, individuals tend to behave in a pro-group behavior as well because group welfare and the reactions of other become salient when a group norm is strong[23]. Without the process of sanctioning, however, the relationship between norms and behavior will not be well established. As discussed earlier, norms become effective because of the component of sanctioning. Group norms, in other words, do not encourage pro-group behavior directly, but by increasing the perceived level of sanctioning if one does not behave accordingly[24]. That is, this research argues that the strength of norms influences the level of perceived social sanctions, which in turn influences individuals' pro-group behaviors. Perceived sanctions, thus, play essential mediated roles in the norms-behavior relation and norms-intention relation. Based on the literature discussed here, this dissertation hypothesizes:

[22] However, some argue that sanctioning is costly so individuals are unwilling to impose sanctions (Flache, 1996; Molm, 1997).
[23] Sanctioning is motivated not only by norm content (shared common interest), group welfare but also by exchange relationships or structural factors of interdependency (see Horne, 2001; Horne, 2007).
[24] Rather than focusing on norms as only the actual behaviors of punishments and rewards assumed by many sociologists, this research recognizes the importance of perceived norms and perceived social sanctions from outside of individuals as the mental representation of norms and sanctioning in relation to the process of behavioral change.

H5a: Group norms increase the levels of perceived social sanctions (i.e., rewards and punishments) from group members. Group norms increase group members' perceptions in receiving social rewards if they drinking alcohol and in receiving social punishments if they did not drinking alcohol.

H5b: Perceived social rewards for drinking and social punishments for not drinking increase the levels of drinking intention and behavior.

H5c: Perceive social rewards for drinking mediate the relationship between group norms and drinking intention. That is, group norms have a positive direct effect on social rewards and a positive indirect effect on drinking intention through social rewards.

H5d: Perceived social rewards for drinking mediate the relationship between group norms and drinking behavior.

H5e: Perceived social punishments for not drinking mediate the relationship between group norms and drinking intention.

H5f: Perceived social punishments for not drinking mediate the relationship between group norms and drinking behavior.

Transmission of Norms

Social norms and sanctions occur through the process of social interaction. Blau ([1964] 1996:264) recognizes the importance of communication at the societal level and states, that "social communication is essential to sustain the structure of social relations and the networks of social transactions that integrate large collectivities into a social unit." Although norms become effective through sanctioning, normative messages have to be first understood, shared and accepted by group members. Therefore, through the mechanism of social interactions such as interpersonal communication, norms are distributed and may become widespread. Here I argue interpersonal communication influences the process of norm transmission and reinforces the

influence of norms. Unless individuals' positive attitudes and behaviors are actually presented and a good-communication pattern flows among group members, successful interaction cannot exist and normative messages cannot be propagated.

Diffusion of Innovation

While sociology is particularly well suited for analyzing the patterns or structural feature of interactions, communication is essential for understanding the process, frequency or content of social interactions. Rogers' ([1983] 2003) Diffusion of Innovation model provides good explanations of the diffusion of a new idea, practice or norm and the process of decision-making. First, we should understand the definitions of innovation and communication. Diffusion is defined as the process by which (1) an innovation (2) is communicated through certain channels, (3) over time, and (4) among the members of a social system (Rogers, [1983] 2003:11). Communication can be defined as "a process in which participants create and share information with one another in order to reach a mutual understanding" (Rogers, [1983] 2003:35). Similarly, communication is also viewed as "a process whereby messages are transmitted and distributed in space for the control of distance and people" (Carey, 1989: 15). Two interrelated processes are specified in the Diffusion of Innovation model: 1) a spatial-temporal dissemination of an innovation within a social system (what, where, and to whom), and (2) a decision process in which individuals learn about, evaluate, decide, and adopt an innovation (how and why) (Kincaid, 2000). Specifically, level of social interaction of a new idea affects the level of sharing new thinking within a social system. The rate of diffusion, thus, is influenced by values and beliefs about the innovation depending on its relative advantage, compatibility, complexity, obervability and trialability (i.e., the degree to which an innovation may be experimented). Rogers ([1983] 2003) argue**s** that interpersonal channels are more important at the persuasion

stage of the innovation process in comparison with mass media channels. Interpersonal communication provides a two-way exchange of information in securing clarification or addition information about new ideas from another individual. In other words, it is through interpersonal channels, individuals can overcome "social-psychological barriers of selective exposure, selective perception and selective retention" (Rogers, [1983] 2003:205).

Communication and Group Norms

The Diffusion of Innovation model is widely used to explain individuals' adoption of new ideas and practices; however, this research uses the assumptions in the Diffusion of Innovation to explain the transmission of norms and argues that interpersonal communication provides a link between individuals and group members. In addition, it is through the directed experience of interpersonal communication, group members can not only construct good relationships with their new members, but also come to understand other members and to gain and share information; they can also learn the details of exceptions, values, attitudes and behaviors from their group members. Communication is important to explain norms because it "shapes the range of permissible and impermissible relationships between persons, and so produces a social structure; and represents the process through which cultural values, beliefs, goals and the like are formulated and lived" (Sigman, 1995: 2). Within this view, interpersonal communication is considered as a tool for individuals to achieve a desired goal, such as meeting the group expectations (Riml & Real, 2003). Because positive interpersonal interaction is the foundation of social processes (Laumann, 1973) and interpersonal influence is involved in producing attitudinal consensus and behavioral uniformity (Abelson, 1964; Friedkin & Johnsen, 1999), communication becomes an important medium to transmit group expectations and consensus.

Communication not only helps produce homogenous or coordinated normative messages, but it also helps resolve the day-to-day conflicts, small and large, that arise in groups. On the other hand, misperceptions of group behaviors can be developed though communication on a specific topic (Real & Rimal, 2003). For example, individuals who are involved with interpersonal discussion about drinking on campus often believe that the prevalence of alcohol consumption is far higher than the actual level of consumption.

Communication and Health Behaviors

Empirical evidence suggests that public health communication can significantly influence health behaviors. Two types of commonly used channels in health campaigns include mass media and interpersonal communication. While mass media are effective at disseminating health information and increasing awareness, interpersonal communication is necessary for behavior change (Hornik et al., 2001; Valente, 1993; Valente, Poppe, & Merritt, 1996). In addition, level and persuasiveness of interpersonal communication within a minority group are found to be important determinants of whether new health behavior diffuses over time (Kincaid, 2004). Many interventions using interpersonal channels through family or friends have increased the number of successful diagnoses and treatments. For example, health campaigns through interpersonal channels have been used widely in the context of alcohol and drugs (e.g., Office of National Drug Control Policy, 2004; The Advertising Council, 2003) and depression campaign (e.g., National Institute of Mental Health, 2003). Recently, online communication has found to be an important source for social support. For example, cancer patients cope or adapt to their illness through socially supportive communicative interactions and relationships (Robinson & Turner, 2003; Walther & Boyd, 2002). The role of online communication in health behavior

shows that computer-mediated communication channel could be more effective interpersonal medium without face-to-face communication and online social support could exist without the strong-tie relationship.

While sociologists pay more attention to the emergence and enforcement of norms, communication scholars are more interested in the relationship between communication and behavior. Little work has been done to explain the transmission of norms in both disciplines; in particular, the relationships among norms, communication and health behaviors have not been explicitly studied (except for Rimal & Real, 2003). Based on the Diffusion of Innovation (Rogers, [1983] 2003) and the norms literature, I argue that transmission of group norms that approving drinking behavior and the magnitude of this normative influence on college students' drinking behavior depends on the level of communication. Communication is defined as the frequency of discussion of getting together to drink and what happened after drinking. The relationship between drinking norms and behavior cannot be established without the process of communication among members. Developing a more thorough understanding of social interactions may help us answer a fundamental question motivating this work: How are normative messages shared by group members? This study thus proposes:

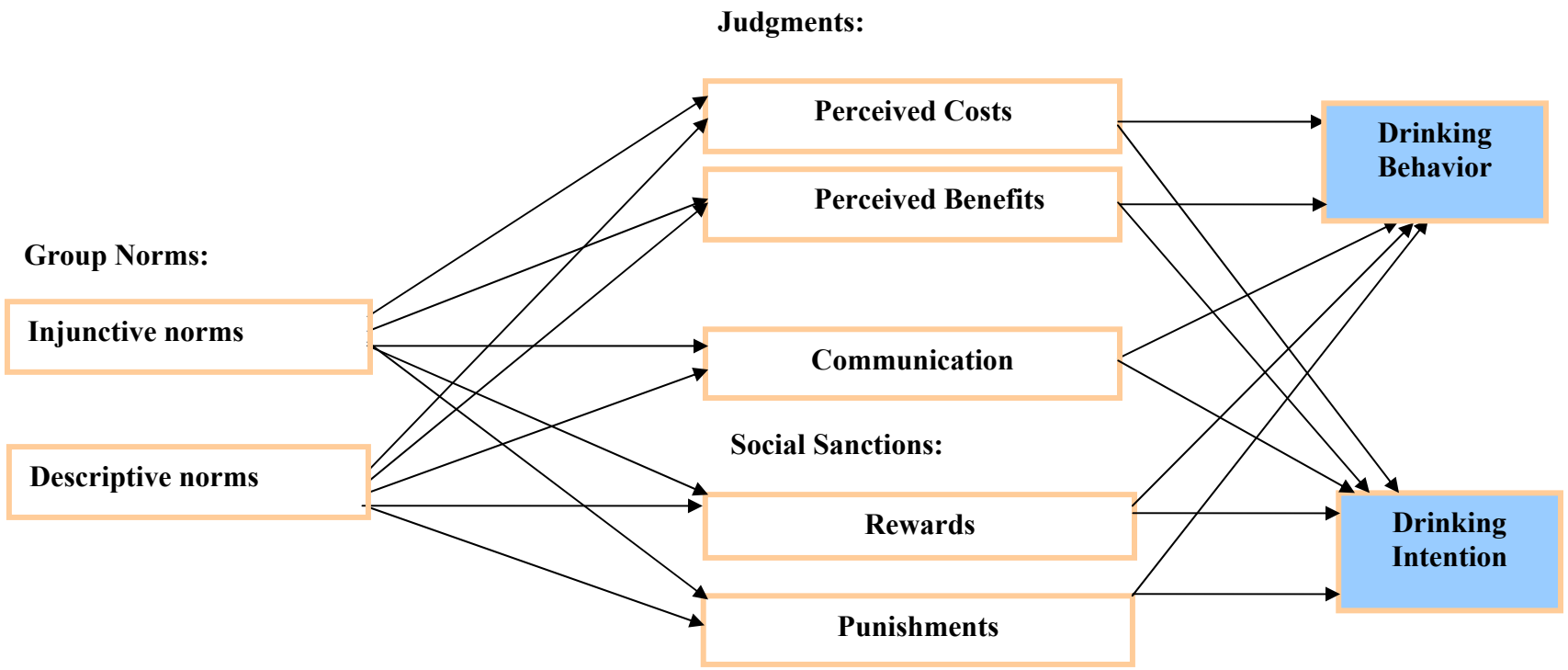
> *H6a: Group norms increase level of communication (i.e., talking about getting together to drink and talking about what happened after drinking) among group members.*
>
> *H6b: Level of communication increases level of drinking intention.*
>
> *H6c: Level of communication increases level of drinking behavior.*
>
> *H6d: Communication about drinking alcohol mediates the relationship between group norms and drinking intention. That is, group norms have a positive direct effect on communication and a positive indirect effect on drinking intention through communication.*

H6e: Communication about drinking mediates the relationship between group norms and drinking behavior. That is, group norms have a positive direct effect on communication and a positive indirect effect on drinking behavior through communication.

Summary

This chapter addressed three research questions of "what is the mechanism of normative influence," "how are norms enforced," and "how is a normative message transmitted?" by proposing some possible mechanisms linking norms and behaviors. This dissertation proposed five mediators to investigate the relationship between norms and behaviors and the relationship between norms and intentions. First, this research assumed that cost and benefit judgments on drinking mediated group norms and college students' drinking behavior based on Giddens' theory of structuration (1984) and Bandura's Social Learning Theory (1977) and Social Cognitive Theories (1986). Then, this dissertation drew on theoretical insights from sociologists to emphasize the role of social sanctioning in the enforcement of drinking norms. That is, perceived social punishments and rewards reinforced the influence of norms on students' drinking behavior. Finally, this research used the framework from Rogers' ([1983], 2003) Diffusion of Innovations model to identity one specific characteristic of social interactions: interpersonal communication and argued that norms were shared by group members through the mechanism of communication. The concepts of cost-benefit judgments, social rewards, social punishments and communication are important mediators in explaining norms mechanism, norms enforcement and norms transmission. Figure 4 provides a depiction of the proposed conceptual model for this study.

Figure 4 Conceptual Theoretical Model



Control Variables: gender, Greek, athletes

CHAPTER FOUR

RESEARCH DESIGN AND METHOD

Chapter Overview

This chapter discusses the research methods and procedures used to analyze whether group norms influence college students' drinking intention and behavior. The specific research questions to be addressed include: 1) how do group norms influence drinking behavior? 2) how are group norms (about drinking) shared and transmitted among members? and 3) how are group norms (about drinking) enforced among members? The details of this chapter include research setting, design, questionnaire development, and sample section and data collection procedures. In addition, the operationalization of constructs and measurement of variables, the pilot test and data analysis plan will be discussed in this chapter.

Research Setting

This study was conducted among student organizations at University of Tennessee (UT). Instead of studying drinking behavior and norms only at the individual-level, this study considers the influence of social interaction on drinking behavior at the group level. The group dynamic associated with drinking behavior and intention is the fundamental setting for this research. College student organizations provide a good setting for investigating the main concepts of this study such as norms and social sanctions at the group-level. In addition, the social function of student organizations is an important component for studying college students' drinking behavior and intention because evidence shows that college students consume alcohol mainly for social reasons (Neighbors et al., 2007). Therefore, the social activities and group dynamic of student organizations are a suitable social context for this study.

Research Design

A cross-sectional survey design was used to test the proposed hypotheses. One of the benefits of using a cross-sectional sample survey is the ability to make inferences to the larger population by collecting data at a single point in time from a carefully selected sample. The purpose of utilizing this design was to collect data from student organizations in order to compare findings among groups with the goal of examining possible relationships between social norms, cost-benefit judgments, group characteristics, interpersonal communication patterns, and their potential impacts on drinking intention and behavior. Although a causal relationship cannot be established by using survey research, because of the difficulty in controlling for extraneous and confounding variables, formulating possible factors to be associated with norms and drinking behavior assist in further understanding normative influence and health decision-making among college students.

A self-administered Internet survey was used for data collection and an electronic mail questionnaire was emailed to members who registered for student organizations or clubs at UT (see Appendix B for final questionnaire). The Internet surveys were chosen over mail surveys, face-to-face interviews or telephone interviews for several reasons. First, Internet surveys may provide a way for reducing survey non-response or improving survey participation, particularly among groups with high levels of Internet access such as university students (Couper, 2000; Dillman, 2000). Second, using Internet surveys provides the least intrusive way of collecting data and can reasonably ensure anonymity. Gaining access to enough student members to make this study feasible, required permission to use email mailing lists from each student organization president. Student organization presidents are sensitive to members' privacy so a request to

infringe on members' privacy requires assurance of minimal intrusion and respondent anonymity. Conducting an Internet survey does not require respondents' physical home addresses, phone numbers or any personal identification except for the email address. To ensure anonymity, subjects' personal identifiers were not collected during this study. In addition, only student organization presidents have participants' contact information and the researcher of this study did not have participants' email addresses or other contact information except for those who chose to enter a drawing for gift certificates. Students could enter their email addresses for the drawing of gift certificates; however, their email addresses were not stored with data from their responses. Instead, another link was provided for the drawing so an individual subject's email address was not linked to his/her responses. After contacting the winners of the drawing, those email addresses were destroyed. In addition, this study used secure software and encrypted web link (i.e., Survey Monkey) for the survey and did not collect respondents' computer IP addresses in order to protect privacy of participants. These practices are consistent with procedures required by both Washington State University (WSU) and UT Institutional Review Board.

Third, another reason for selecting the Internet survey method is that this study's instrument contains questions about sensitive topics, such as, participant's drinking attitude, past drinking behavior, future drinking intentions and perceptions of their group members' drinking attitude and behavior. When respondents are asked about their attitudes, beliefs or behaviors regarding sensitive materials, respondents sometimes answer questions to conform to the dominant belief patterns among groups to which the participants has some sort of identification (Dillman, 2000). This phenomenon, referred to as socially desirable responding, is of particular concern in this research. Several additional steps were taken to minimize the effects of socially desirable responses in this study. In the consent form, participants were reminded that the

completed survey could not be tracked back to the individuals and the results of this study would be reported only as statistical averages and never in terms of individuals or specific student club or organization. Although it is not possible to completely resolve the issue of socially desirable responses, a self-administered online questionnaire where no tracking system for participants and statements assuring anonymity were considered reasonable approaches to deal with the socially desirable issue in a way that telephone or face-to-face interviews could not as efficiently manage.

Finally, the benefits of Internet-based surveys include reduced implementation costs and faster data collection and entry (Witmer et al., 1999). Cost of conducting this research was another key factor of choosing the Internet surveys over the other three research methods. It has been estimated that completed mail survey costs about 50% less than telephone survey and 75% less than face-to-face interview when the questionnaire length or the research objective remain the same (Bourgue & Fielder, 1995). In addition, time and labor intensive in data collection and processing procedures were other factors of choosing Internet survey.

Sample Selection

The sample frame for this study came from the mailing lists of student organizations and clubs registered at UT in the spring semester of 2009. The inclusion criteria for subjects are: 1) college male or female students aged at least 18 years old; and 2) able to understand written informed consent and to comply with all study procedures. The exclusion criterion was students who were under 18. Since student members' personal and contact information could not be released to any individuals, this study was not able to randomly select members or organizations. Instead, a letter of invitation to participate in this survey was sent out by Office of the Dean of Students and Center for Fraternity and Sorority Life at UT, which supervises non-Greek organizations and Greek organizations, respectively. Organizational types in the sample frame

included: academic, Greek, religion, sports, special interest and international/ethic groups.

Questionnaire Development

The survey instrument was developed with an extensive literature review complemented by interviews, academic experts and the process of pretesting and revising. For example, in-depth interviews with three undergraduate students were conducted to clarify the wording and content of measures. To ensure quality of the instrument, three professors in the sociology and psychology department were asked to review the questionnaire and provide comments regarding overall presentation, response format, clarity of wording, content appropriateness, arrangement and flow of items and instructions to respondents. Some content modification and format adjustment were made based on this step. Further, the questionnaire was emailed to all graduate students in the department of sociology at WSU to receive some feedback. Wording and format were further refined based on the feedback from 10 graduate students.

Data Collection Procedures

Prior to the actual study, several steps were taken to receive the permission to study student organizations at UT. First, human subject approval was applied for and granted through WSU and UT Institutional Review Board. Second, a written proposal describing this project and research goals along with the questionnaire were sent to Office of the Dean of Students and Center for Fraternity and Sorority Life. Third, this study's proposal and questionnaire were sent to the National Panhellenic Conference (NPC) for requesting approval to study sorority students in colleges. Finally, a letter for requesting the permission of forwarding this survey to group members was sent to all presidents of student clubs or organizations.

Survey setting and other technical issues were carefully reviewed and tested before carrying out the study. First, the researcher of this project consulted with online survey design professionals to discuss the possible technical issues of conducting the Internet survey including security issues, interface design and spam filter. Second, the survey setting for this study was carefully designed. For example, the survey setting was designed so respondents could go back to previous pages in the survey and update existing responses until the survey was finished or until they had exited the survey. After the survey was finished, however, the respondents would not be able to re-enter the survey. Third, the respondent's IP address was not stored in the survey for privacy protection. The survey also allowed for multiple responses per computer for kiosks or computer labs. Finally, in order to prevent email being captured by respondents' spam filters, Spam language such as “win,” “prizes,” “last chance,” the use of “$ and “!!!!” and words with all caps were avoided in the email messages and subject titles. All emails were sent to the researcher of this study to test messages against her spam filter before the survey period began.

Two weeks prior to the emailing out of the survey, the researcher of this study met with the associate director from Dean of the Students and the director from Center for Fraternity and Sorority Life to discuss the procedures of data collection. The researcher also attended two fraternity and sorority president meetings to encourage presidents and their members to participant in this study. Two weeks later, a letter with the introduction of this study, informed consent and a web link to this study's survey was emailed to the presidents of student organizations that were willing to participate in the study. Each president of a student organization was then asked to immediately forward this email with the survey link to his or her group members once the survey was sent out. During the survey period, participants were contacted through emails three times including a pre-announcement of survey, the actual survey

and one reminder. A copy of survey invitation, informed consent and reminder is provided in Appendix D.

To encourage participation and reduce non-response rate, students could choose to enter into a drawing for free coffee coupons ranging from 3 to 10 cups and one $10 coffee gift certificate. There were approximately 500 cups of Starbucks coffee and 20 gift certificates offered for this study. In addition, $20 was donated to each organization that participated in this survey. After data collection was completed, the researcher of this study conducted a drawing and winners were contacted by email.

The timing of sending out the survey can be crucial for data collection. This research was conducted after the Thanksgiving break because this study was interested in investigating students' drinking behavior on a regular basis and avoided the time that students might tend to consume more alcohol, such as, fall or spring breaks. Due to the high amount of business-related spam messages generally sent out over the weekends, this study chose Monday and Tuesday to send email in order to prevent the messages from being hidden among spam messages. In addition, the response rate tends to be lower once the week gets closer to the weekends.

Operationalization of Construct and Measurement

This study used multi-item measures to examine unobservable constructs to increase the reliability (Churchill, 1979). The key constructs of this study include descriptive norms, injunctive norms, communication pattern, cost-benefit judgments, perceived social sanctions, networks, group cohesion, drinking attitude, and drinking intentions. These constructs were measured by either existing scales that had been validated in the previous studies with some

modification to fit the present research context or by newly developed measures.

Table 3 and 4 provide a summary of operationalization for the variables used in this study and the corresponding definition and source. The following section describes specific variables and the items used to measure each variable.

Table 3: Operationalization and Scale Source for Dependent Variables

Variable	Conceptual Definition	Operational Definition	Scale Source
Drinking Intention	An individual's relative strength of intention to perform a behavior (Fishbein & Ajzen, 1975)	Likelihood of engaging in drinking and of ending up legally intoxicated over the next two weeks and 30 days	New
Drinking Behavior	Individuals' regular drinking habit	Quantity and frequency of alcohol consumption	New

Table 4: Operationalization and Scale Source For Independent Variables

Variable	Conceptual Definition	Operational Definition	Scale Source
Descriptive Norms	Perception of prevalence of other's actual behavior (Cialdini, Reno, & Kallgren, 1990)	Perceptions of the behavior of typical students in terms of (1) number of drinks consumed per week, (2) frequency of consumption, & (3) number of drinks consumed per occasion	Modified from Drinking Norms Rating Form (DNRF; Baer et al., 1991)
Injunctive Norms	Approval/disapproval of certain behavior from others; There is must some degree of consensus (Horne, 2001b)	Perceptions of collective attitudes toward the approval of drinking from group members on different occasions	Trockel, Williams & Peis, (2003)
Cost-benefit Judgments	Perceived benefits of drinking and costs resulting from drinking	Judgments on particular effects of alcohol are good or bad independent of the likelihood of the effects happen to one person	The Brief Version of Comprehensive Effects of Alcohol questionnaire (B-CEOA; Ham, et al., 2005)
Social Sanctions	Informal social control with external evaluations (Horne 2001b; Hechter & Opp, 2001)	Perceived punishments and rewards associated with drinking from group members	New
Communication Patterns	"a process whereby messages are transmitted and distributed in space for the control of distance and people" (Carey, 1989, p. 15).	Frequencies of discussing getting together to drink and what happened after drinking	New
Drinking Attitude	Association in memory between a given object and evaluation of that object (Fazio, 1990)	Evaluations on overall drinking, underage and heavy drinking	New

Independent Variables

Descriptive Norms. Descriptive norms are defined as the perception of the actual behavior of others (Cialdini, Reno & Kallgren, 1990) and measured by perceived frequency and quantity of alcohol consumption from the majority of group members. Respondents were first asked to answer one yes-no question, "Do the majority of your group members drink alcoholic beverages?" Then respondents were asked to estimate the number of drinks the majority of group members have at one occasion and number of days the majority of members drink weekly. These items were modified from Drinking Norms Rating Form (DNRF; Baer et al., 1991).

Injunctive Norms. Injunctive norms are defined as the behaviors or attitudes that are judged to be acceptable or expected within a social system (Cialdini, Reno & Kallgren, 1990). In other words, there must be some degree of consensus among group members in terms of injunctive norms. To assess injunctive norms, respondents were asked to rate six statements about collective expectations of drinking behavior on different occasions from group members by using a Likert-type scale ranging from 1 (strongly disagree) to 7 (strongly agree) (adopted and modified from Trockel, Williams & Peis, 2003). Example items are "The typical member of my organization approves of drinking at parties," and "The typical member of my organization approves of getting drunk on weekends."

Cost-benefit Judgments. Cost- benefit judgments are defined as the subjective evaluations that individuals hold regarding alcohol or concerning the effects of alcohol (Brown et al., 1980; Sher et al., 1996). Cost-benefit judgment is measured by perceived benefits of drinking and costs resulting from drinking by using the Brief Version of Comprehensive Effects of Alcohol Questionnaire (B-CEOA; original version from Fromme et al., 1993; brief version from Ham, et al., 2005). Respondents were asked to rate 15 items on particular effects of alcohol are positive

(good) or negative (bad) independent of the likelihood of the effects happening to them by using a Likert-type scale ranging from 1 (bad) to 4 (good). Example items are "If I were under the influence of alcohol, I would act sociable" and "If I were under the influence of alcohol, I would take risks."

Interpersonal Communication. Interpersonal communication is defined as the process in which individuals create and share information in order to reach mutual understanding (Rogers, 2003). Communication patterns were measured by two questions, "During the past 30 days, how many times have you talked with your group members about getting together to drink?" and "During the past 30 days, how many times have you talked with your group members about what happened after drinking?"

Social Sanctions. Social sanctions are informal social control that is distinct from legal control. A sanction is a punishment or reward enacted on the basis of social agreement that a given course of action ought (or ought not) to occur (Blake & Davis, 1964; Coleman, 1990). In other words, sanctions consist of punishments or rewards combined with the sense of oughtness. To assess sanctions, five items about perceived punishments if individuals do not engage in drinking and five items about perceived rewards if individuals engage in drinking were measured. Responses are recorded on Likert-type scales ranging from 1 (i.e., strongly disagree) to 7 (i.e., strongly agree). Example items for perceived punishments include "If I did not drink alcohol at a party/social gathering, someone from my organization would pressure me to drink" and "If I did not drink alcohol at a party/social gathering, someone from my organization would tease me about not drinking." Example items for perceived rewards include "If I drank alcohol at a party/social gathering, members of my organization would generally think I fit in with the group" and "If I drank alcohol at a party/social gathering, members of my organization would

generally think I am being sociable."

Drinking Attitude. Attitude is defined as "an association in memory between a given object and one's evaluation of that object" (Fazio, 1990: 81). Attitudes can influence our initial perception of an object and shape the interoperation of our perception. In this study, attitudes toward overall drinking, underage drinking and heavy drinking were measured by three items including "It is alright for students to drink alcoholic beverages occasionally" "It is alright for students who are under 21 to drink alcoholic beverages" and "It is alright for students to drink five or more alcoholic beverages on the same occasion."

Drinking Reasons. Besides studying drinking attitude and behavior, it is important to understand the reasons that students drink or not drink alcohol. To measure drinking reasons, two open-ended questions were used to estimate the reasons that respondents drink alcoholic beverages when partying or socializing with friends and when they are alone. In addition, one open-ended question was used to measure the reason that respondents did not drink alcohol during the past 30 days.

Dependent Variables

Drinking Intention. Behavioral intention is defined as an individual's relative strength of intention to perform a behavior (Ajzen & Fishbein, 1975). Drinking intention was measured by four-items assessing participants likelihood of engaging in drinking and of ending up legally intoxicated over the next two weeks and next 30 days. Responses were scored on a 1 to 7 scale ranging from "highly unlikely" to "highly likely." Higher scores indicated higher likelihood of engaging future drinking.

Drinking Behavior. Drinking behavior is defined as the quantity and frequency of alcohol

consumption on a regular basis. To assess quantity and frequency of alcohol consumption, participants were asked to rate their drinking experience in the past 30 days, past week and on average. For example, subjects were asked, "During the past 30 days including today, have you ever had a drink of any alcoholic beverages? Please do not include times when you only had a sip or two from a drink?" For those who had ever drunk at least once in the past 30 days were then asked to rate the times of having five or more drinks at one sitting and the times they have ever felt sick to their stomach after drinking for the indication of getting drunk in the past 30 days. Subjects were also asked to rate the number of alcoholic beverages they had consumed in the past week, on a weekday and a weekend.

Control Variables

Control variables that might affect the hypothesized relationships including gender, international students, fraternity/sorority affiliation and athlete membership were taken into consideration. Empirical studies have demonstrated that these demographic characteristics are important factors that are related to college students' drinking attitudes and behavior (e.g., Neighbors, et al., 2007). For example, a number of studies have found that fraternity and sorority members consume more alcohol than non-Greek students (e.g., Borsari & Carey, 1999; Larimer et al., 2000). Male students drink more frequently, consume larger quantities of alcohol and engage in heavy drinking more often than female college students (e.g., Johnston et al., 2005; Read et al., 2002).

CHAPTER FIVE

DATA ANALYSIS AND RESULTS

Chapter Overview

Chapter Five presents the analyses of the survey data and results of hypothesis testing. This chapter is organized into four major sections. The first section details the process of data screening and preliminary analysis including response rate, respondent characteristics, non-response bias analysis and missing data analysis. The second section discusses scale validation in terms of unidimensionality, reliability and validity of construct using both exploratory factor analysis (EFA) and confirmatory factor analysis (CFA, Anderson & Gerbing, 1998; Nunnally & Bernstein, 1994). The third section presents analyses in sections corresponding to the theoretical sub-models and subsequent post-hoc analyses exploring alternate models and non-hypothesized relations. Structural Equation Modeling (SEM) was used to test this study's hypotheses. The reminder of the chapter details three open-ended questions related to reasons of drinking alcohol with friends, drinking alcohol alone and not drinking alcohol.

Data Screening and Preliminary Analysis

Response Summary

The distribution and summary of responses are shown in Table 5. Approximately 226 registered student organizations at the University of Tennessee were contacted. Of these, 73 student organizations, including various academic, athletic, Greek, Special interest, service, religious, and international organizations, promised to participate in the study. The estimated number of organization members who had received the online survey was 2,494. This number may be overestimated because the email list of individual members was not accessible. In

addition, some presidents of organizations may not have forwarded the online survey to group members, so it was not possible to calculate the actual number of participants receiving the survey. Of those who have accessed to the survey (N = 685), 74.5% of students completed the survey (N = 510), which yields an approximate response rate of 21.6%. This response rate could be underestimated due to the overestimate of the total subjects who received the survey. There were 18 cases containing less than ten responses to the entire survey possibly reflecting students who quit after responding to a few questions. In addition, there were 35 cases removed from the data because they were graduate and post-graduate students. The final number of valid cases for analysis was 457.

Table 5 Summary for Survey Response

	Number	Percentage
Number of organizations contacted	226	-
Number of invalid organization email addresses	10	4.4%
Number of organizations participated in the survey	73	33.8%
Estimated number of member contacted	2494	-
Number of participants accessed to the survey	685	27.5%
Number of completed survey	510	74.5%
Estimated response rate	-	21.6%
Final valid cases	457	-

Note: Response rate was only estimation because the email list of individual members was not available and some of the members could not be reached. Response rate was calculated by Churchill's (1991) formula: CQ/ CQ + [(CQ/CQ + IN)][NC], where CQ = completed questionnaires, NC = not completed or refused and IN = ineligible.

Non-Response Bias Analysis

This study used two methods to analyze non-response bias. The first approach was to divide the survey response data into early and late response groups based on the date of accessing the survey. Armstrong and Overton (1977) argues that subjects who respond less readily are more similar to non-respondents. The second approach required a random and equal split of responses. A comparison of differences in the means of responses between early and late

groups and between the two randomly split groups were analyzed on the main variables of this study. Researchers (e.g., Armstrong & Overton, 1977; Hair et al., 1998) have demonstrated this comparison is valid non-response bias analysis. Those online questionnaires received during the first four weeks of the survey period were considered early responses whereas the reminding completed questionnaires were included in the category of late response group. As a result, the percentages of early and late response groups are 65.2% and 34.8% respectively. Based on the second approach, the online questionnaires were divided into two random groups of roughly equal size. The two data groups had 52 respondents and 56 respondents, respectively. The means of the major variables were then compared in both groupings.

For comparison between early and late response groups, the results of ANOVA indicated significant differences in several variables including drinking attitude ($F = 28.87$, $P = 0.000$), drank in the past 30 days ($F = 30.73$, $P = 0.000$), and drinking intention ($F = 59.42$, $P = 0.000$). However, the variables for cost and benefit judgments, number of occasions for five or more drinks in one occasion and number of times feeling sick after drinking were not significantly different between these two groups. The results of ANOVA indicated about 50% of the variables were found significantly different whereas 50% of them were not significantly different. For example, drinking attitude ($F = 4.39$, $P = 0.04$), drinking intention ($F = 13.26$, $P = 0.000$), drinking habit ($F = 10.73$, $P = 0.001$) and injunctive norms ($F = 8.42$, $P = 0.005$) found significantly different between these two groups whereas no significant differences were found in the variables of perceived cost of drinking ($F = 1.25$, $P = 0.27$), perceived benefits of drinking ($F = 2.69$, $P = 1.04$), and drank five or more drinks in one occasion ($F = 2.52$, $P = 0.117$). These results indicate a potential problem of non-response bias. However, this study found that the early response group mainly consisted of Greek students (75.2%) and the randomly and equally

divided sample included a majority of Non-Greek students (63%), which may explain the differences between these groups. Therefore, this initial analysis indicates a potential difference in patterns of drinking attitude, intention and behavior among Greek and non-Greek students.

Missing Data Analysis

Missing values were carefully examined by case and for each survey item across cases. As described earlier, 18 cases that had significant missing data were removed from the analysis. Several tests of missing values were conducted to assess if the type was Missing Completely at Random (MCAR) or Missing at Random (MAR) (Allison, 2002). Missing values in this data indicated type MAR, which exists when missing values were not randomly distributed across all cases (MCAR), but randomly distributed within subsamples (Garson, 2008). The conventional approaches of listwise deletion (i.e., cases with missing data on any used variables are removed) and pairwise deletion (i.e., remove cases which do not have data on a used variable in the current calculation only) assume missing values are MCAR, which lead to potential misinterpretation or bias. Expectation maximization (EM) has been shown to be superior to listwise, pairwise and mean imputation estimation techniques (Meng, 2000). Using the EM algorithm results in inconsistent standard errors of the parameter estimates and confidence intervals and significance tests may be compromised (Brown, 2006). According to recent methodologists, maximum likelihood (direct ML) and multiple imputations are considered preferred methods for handing missing data (Allison, 2003; Brown, 2006). For example, Peters and Enders (2002) suggest that special maximum likelihood-based techniques for incomplete data performed better than the conventional methods. Direct ML is considered a suitable method to keep the majority of observations for the current data because some of the main variables contained more than 15%

missing values.

Data Distribution

The majority of items were worded as statements and based on a seven-point scale anchored by "strongly disagree" to "strongly agree." Means ranged from 2.4 to 5.9, standard deviations ranged from .50 to 3.39, indicating the data might slightly depart from normality. Normality tests, however, showed that the highest absolute value of skew index was 2.7 and highest absolute value of kurtosis index was 9.7, which were within acceptable ranges (see DeCarlo, 1997 for more discussion)[25].

Outliers and influential cases were carefully examined by diagnostic graphs and influential statistics (Hamilton, 1992). Residual-versus-fitter plots were first conducted to overview the regression residuals and then leverage-versus-squared residuals were used to identify how much potential an observation could influence regression based on its combination of x values. According to the leverage plot (see Figure A – Appendix C), five cases showed potential outliers. An outlier, however, may not be an influential case. Therefore, a variety of diagnostic statistics were analyzed including Cook's D, COVRATIO, DFBETA, DFITS, Leverage (hat statistic, h), WELSCH's distance, standardized and studentized residuals.

While DFBETA reports how many standard errors the coefficient on an independent variable would change if case i were dropped from the regression, Cook's D, Welsch's distance, and DFITS summarize how much one case influences the regression model as a whole (Hamilton, 1992). In addition, COVRATIO measures the influence of a specific case on the standard errors. Leverage indicates the influence of the i^{th} combination of an independent variable, x. Studentized residual measures the i^{th} observation's influence on the y-intercept.

[25] Variables with absolute values of the skew index greater than 3.0 are considered "extremely" skewed, however, scholars do not have consensus on the kurtosis index. Some researchers suggest that absolute values of kurtosis index greater than 10 may suggest a problem and values greater than 20 may indicate a serious one (DeCarlo, 1997; Kline, 2005)

Approximately 17 cases were identified as outliers based on DEBETA analyses (see Figure B and C – Appendix C). Careful inspection on influential cases was conducted by repeating the regression model without the influential cases. For example, all the cases that had absolute DFBETA greater than 0.5 (i.e., greater than half a standard error) were set aside. The results of diagnosis tests indicated that influential cases changed the coefficients of some independent variables, but did not statistically change the significance levels and overall predictions of independent variables on dependent variables. Therefore, these influential cases remained in the data set for further analysis.

Analyses of heteroscedasticity, auto-collinearity and multi-collinearity were performed to evaluate whether SEM estimates were appropriate for hypothesis testing. Heteroscedasticity of residuals was initially detected by considering the plots of residuals versus fitted values and then confirmed by performing the modified Levene tests of nonconstant variance as suggested by Cohen et al. (2003). Specifically, heteroskedasticity tests the assumption of constant error variance by examining whether squared standardized residuals are linearly related to predicted *Y* (Cook & Weisberg, 1994). Results from two regression models (*y*1 = drinking intention; *y*2= drinking behavior) suggested that errors had constant variance ($p <$. 0001).

The Durbin-Watson statistic, *d,* was used to test for autocorrelation, that is, correlation between values of the same variable across different cases (Hamilton, 1992)[26]. As a rule of thumb, *d* should be between 1.5 and 2.5 to indicate independence of observations (Garson, 2009; Hamilton, 1992). The regression model with the dependent variable of drinking intention and independent variables of the indictors of cost, benefit, communication, reward and punishment reported the Durbin-Waston *d* value was 2.04. The other regression model where the dependent

[26] The value of *d* ranges from 0 to 4. The value of d closes to 0 meaning extreme positive autocorrelation, close to 4 indicates extreme negative autocorrelation; and close to 2 indicates no serial autocorrelation (Garson, 2008).

variable was drinking behavior reported the *d* value was 1.90. Therefore, there was no evidence of auto-collinearity in the data.

Two items (*legal14* and *legal30*) were dropped from the subsequent analysis because of multi-collinearity problem (see Rayjov & Marcoulides, 2008 for multi-collinearity). The collinearity diagnostics showed that these two items have tolerance (1- R2) less than 0.2 and variance-inflation factor (VIF, the reciprocal of tolerance) greater than 9 suggesting strong relationships among predictors and a multi-collinearity problem (Chatterijee, Hadi & Price, 2000). The multi-collinearity issue may result from the inclusion of items with very similar wordings, redundant indicators, or highly overlapping measures (Brown, 2006; Hamilton, 1992). Dropping one or two of the offending and redundant variables is a possible solution to guard against multi-collinearity (Hamliton, 1992). Items of legal14 and legal30 have similar wordings, (i.e., content redundancy) with two other items (i.e., intent14 and intent 30) in measuring drinking intentions in the next 14 and 30 days. Removing these two items, however, did not significantly detract from the conceptual meaning of their respective constructs. These EFA results provided preliminary evidence for adequate factor patterns and internal consistency of all scales, thus, were served as the basis of subsequent measurement validation using CFA estimates (Churchill, 1979).

Respondent Characteristics

Among those who responded to the demographic questions, the majority of students are Caucasian (69%), females (75.6%), aged between 18 and 21 (89%) and affiliated with Greek organizations (47.3%). In terms of drinking behavior, 78.3 percent of students indicated that they have drunk alcoholic beverages in the past 30 days and 78.3 percent of respondents reported having alcohol when they were at a party. In the past 30 days, 45.7 percent of students have felt sick to their stomachs after drinking at least once. Over the same time period, 25.1 percent of students expressed they had never had five or more drinks on a single occasion, but 47 percent of the students indicated at least three times of drinking five more drinks on one occasion. The majority of students also reported that they do not generally drink alcohol alone (94.7%), which implies they tend to drink with friends. In terms of drinking intention, most students expressed agreement in that they would have alcoholic beverages over the next 30 days (77.4%) and 57.6 percent of the students reported that they would be in a situation of being legally intoxicated over the next 30 days. Regarding the perception of group members' drinking experience, 44.3 percent of respondents believe their group members drink three to four alcoholic beverages on a single occasion and 28.8% of them think their group members drink more than five drinks on a single occasion. Finally, the majority of student organizations meet once a week (62.6%) for formal meetings and 22.8 percent of organizations meet more than twice a week for recreational and social activities such as parties, celebration, get-together, movies, and so on. Other demographic information is listed in Table A – Appendix A.

Measurement Evaluation

Scale Purification

Scale purification or refinement serves the purpose of selecting valid and reliable items for representing the constructs (i.e., theoretical concepts) by minimizing measurement error variance before performing hypothesis testing (Churchill, 1979). Measurement errors, however, can bias estimation of structural relationships and places limits on repeatability and validity (Nunnally & Bernstein, 1994). Therefore, the purpose of scale purification is to examine whether measurement items fall into the same or different categories with a given attribute. This study used scale-purification procedures recommended by Churchill (1979) including: 1) examine the inter-item agreement and reliability (i.e., Cronbach's coefficient alpha) for each dimension; 2) remove items with low item-total correlations and those whose removal increases reliability; 3) repeat step one and two until the scale reaches high internal consistency and high reliability; and 4) use factor analysis to verify the dimensionality for the scale.

The use of factor analysis at this stage is to provide a parsimonious understanding of the covariation among a set of indicators, which is based on Thurstone's (1974) approach of the common factor model. According to Thurstone (1974), each indicator in a set of observed measures is a linear function of one or more common factors (variance shared with other indicators) and a unique factor (random error and latent factors that influence only one indicator) (also see Brown, 2006). This study used two types of factor analyses including EFA and CFA for different purposes. EFA, a data-driven and an exploratory approach, was used earlier in the process of determining the appropriate number of common factors and to uncover unreasonable indicators of latent dimensions. In contrast, CFA was used after establishing the underlying model and requires a strong empirical or theoretical foundation to guide the evaluation of the

factor model. That is, we are interested in the question of how well the factor solution reproduces the sample correlation (covariance) matrix of the variable (Brown, 2006). It is important to note that this study used EFA on the base of common factor analysis rather than principle component analysis (PCA)[27].

The results of initial steps of scale purification in this study indicated that all scales achieved adequate inter-item agreement as indicated by item-total correlations ranging from 0.54 to 0.92, greater than the recommended 0.50 (Churchill, 1979; Nunnally & Bernstein, 1994), except for three items (feeling sick after drinking, $r = 0.36$; I will take risks, $r = 0.35$, and I will feel guilty, $r = 0.28$). Cronbach's coefficient alpha for all scales (without removing any items) ranged from 0.73 to 0.97, all greater than the recommended 0.70 cutoff point (Churchill, 1979). Three items with low item-total correlations (i.e., sick, risk and guilty) were removed from the measurement models, which improved levels of Cronbach's alphas for their scales.

Using CFA, maximum likelihood (ML) estimation, quartimin oblique rotation, and eigenvalues greater than one (Burnkrant & Page, 1982), the results of EFA showed that factor loadings (Lambda weights) ranged from 0.40 to 0.97. Except for the scale of benefits of drinking, each scale demonstrated uni-dimensionality by loading on a single factor and had explained variance ranging from 75 to 93 percent. The scale of benefits of drinking yielded two factors with four items (i.e., *social, talk, calm, peace*) loading on the main factor and two items loading on the second factor (i.e., *brave, courage*). Since the main factor explained about 68% of the variance, the main factor was used as an indicator for the scale of perceived benefits of drinking in the subsequent analysis. These four items best represent the important concepts of

[27] PCA has been miscategorized as an estimation of common factor analysis like EFA (Brown, 2006; Rayjov & Marcoulides, 2008). Although PCA and EFA may produce similar results, EFA is more appropriate if the goal is to reproduce the intercorrelations of a set of indicators with a number of latent variables, recognizing the presence of measurement error (Floyd & Widaman, 1995).

this scale.

In order to purify items and reduce measurement error, each measurement item was examined and items with a Lambda weight below 0.6 were removed[28]. A Lambda weight of below 0.4 was not acceptable due to the risk of measurement errors (Singh, 1995). The measurement items with Lambda weights between 0.6 and 0.7 were considered marginally acceptable for inclusion in the study, particularly for EFA. Four cross-loaded items (I will enjoy sex more, I would be a better lover; members approve of drinking, drunk on weekdays and members approve of drinking on weekdays) and factor loadings less than 0.6 (e.g., I would feel aggressive, I would feel calm, someone from my organization would hand me an alcoholic drink) were removed from the measurement models.

Measurement Validation

Prior to hypothesis testing, it is important to conduct measurement validation to confirm the measurement model is sound and meaningful based on previous research evidence and theory. This section discusses procedures of evaluating measurement validity, including construct reliability and construct validity, measurement evaluation criteria, and findings of measurement validation. Specifically, measurement reliability was demonstrated by the evidence of internal consistency, uni-dimensionality and adequate construct reliability whereas construct validity was demonstrated by the results of convergent validity and discriminate validity (Fornell & Larcker, 1981).

[28] There are no arbitrary cutoff levels for factor loadings. Some researchers (e.g., Churchill, 1979) argue for 0.7 or higher factor loadings to confirm that indicators identified a priori are represented by a particular factor. However, empirical data may well not meet this high criterion. Some researchers, particularly for EFA, use a lower level such as 0.4 for the central factor and 0.25 for other factors (Raubenheimer, 2004). Hair et al. (1998) suggest loadings above 0 .6 are "high" and those below 0.4 are "low". Factor loadings must be interpreted based on theory, however, not by arbitrary cutoff levels (see Garson, 2009).

Construct Reliability

A measurement is reliable to the extent that it is repeatable, persistent from sample to sample and free from random error (Nunnally & Bernstein, 1994). Reliability can be assessed by three aspects including internal consistency, uni-dimensionality and construct reliability (Cote & Buckley, 1988)[29]. Internal consistency describes the inter-item agreement of a set of items whereas uni-dimensionality addresses within-factor items and factor items should have one and only one underlying construct in common (Hair et al, 1988). A higher level of coefficient alpha, however, does not automatically imply the measures are uni-dimensional (Nunnally & Bernstein, 1994).

Internal consistency is typically evaluated by correlated item-to-total correlations, average inter-item correlation among scale items, and Cronbach's alpha (Netemeyer, Bearden, & Sharma, 2003). Besides Cronbach's alpha, construct reliability (i.e., composite reliability) based on CFA solutions was also used to measure internal consistency. Because Cronbach's alpha tends to underestimate reliability (Garver & Mentzer, 1999), construct reliability provides adequate estimation of scale reliability by taking into consideration of the error variances. Construct reliability was calculated using the formula recommended by Fornell and Larcker (1981):

$$(\Sigma\lambda)^2 / [(\Sigma\lambda)^2 + \Sigma(1-\lambda_j^2)] \qquad \textbf{(1)}$$

To achieve unidimensionality, adequate factor loadings, degree of cross loading, fit indices, presence of correlated measurement errors, construct reliability and average variance extracted (AVE) should be evaluated (Anderson & Gerbing, 1988; Netemeyer, Bearden, & Sharma, 2003). AVE is a more stringent test for internal stability and construct validity (see more

[29] Garson (2009) suggests squared multiple correlations (R^2 for an item that is predicted from all other items) for another method to check internal consistency. A larger R^2 indicates a higher contribution to internal consistency. Therefore, items with lower R^2 may be considered for removal. The R^2 of some items may be low even with an acceptable Cronbach's alpha overall.

discussion in a later section). The AVE should exceed 0.5 to demonstrate scale reliability (Fornell & Larker, 1981). Table 6 summarizes mean, standard deviation, factor loading, and construct reliability, Cronbach's alpha, AVE, shared variance for each scale. As shown in Table 6, construct reliability for all scales ranged from 0.73 to 0.98, Cronbach's alpha ranged from 0.73 to 0.97 and all AVEs are greater than 0.5; therefore, all measurements used in this study exhibited sufficient internal consistency.

Table 6 Construct Reliability and Validity

Latent Construct		Indictor	Mean	S.D.	Loading	Construct Reliability	Coeff. Alpha	AVE	Shared Variance
Social Norms	Injunctive Norms	mwknd	5.47	1.46	.77	.92	.92	.68	.71
		mdrunkp	4.29	2.07	.93				
		mdrunke	4.61	2.15	.97				
	Descriptive Norms	mdrink	3.08	1.26	.74	.73	.73	.76	.71
		mocasio	3.14	1.13	.78				
Social Sanctions	Reward	fit	3.75	1.61	.91	.88	.88	.71	.35
		tsocial	5.07	1.51	.60				
		cool	3.47	1.50	.85				
		fun	3.90	1.66	.88				
	Punishment	suggest	4.10	1.87	.76	.86	.86	.74	.35
		tease	2.19	1.53	.72				
		pressure	2.40	1.53	.80				
		wrong	2.93	1.73	.84				
Cost-benefit Judgments	Perceived Cost	rmoody	3.54	0.57	.51	.74	.73	.69	.03
		rclum	3.11	0.61	.74				
		rdizzy	3.48	0.62	.82				
	Perceived Benefit	social	3.44	0.71	.89	.84	.83	.79	.03
		talk	3.30	0.73	.89				
		peace	3.10	0.76	.59				
Drinking Decision	Intention	intent14	5.05	2.32	.99	.98	.97	.76	.53
		intent30	5.41	2.22	.95				
	Behavior	fivemore	2.34	1.71	.83	.88	.84	.69	.53
		lstweek	2.54	1.82	.78				
		weekend	2.83	1.62	.93				
		weekday	1.47	0.82	.66				
Communication		together	3.42	2.98	.91	.90	.89	.81	-
		happen	3.90	3.40	.89				

Construct Validity

Validity refers to the instrument stability in terms of "how well it measures what it purports to measure" (Nunnally & Bernstein, 1994, p.83). An instrument is valid if there are no logical errors in drawing conclusions (Garson, 2008). Campbell and Fiske (1959) introduced four key points to assess construct validation including: 1) validation is convergent if two methods of inferring an attribute lead to similar findings; 2) a measure should have divergent validity in terms of measuring something different; 3) a measure is jointly defined by a method and attribute-related content; and 4) a multitrait-multimethod matrix (MTMM, at least two attributes, each measured by at least two methods) are necessary to examine discriminate validity. There

are many different types of construct validity, this study mainly focuses on convergent validity and discriminate validity. The following paragraphs provide definitions and procedures of measuring construct validity but the results of construct validity and discriminate validity between constructs are detailed in the section of CFA model findings.

Convergent Validity

Convergent validity is "the degree to which two or more attempts to measure the same concepts ... are in agreement" (Bagozzi & Phillips, 1982). In other words, different measures of similar constructs should be strongly correlated. Convergent validity is demonstrated by strong correlations among methods measuring the same trait in the MTMM matrix (Peter, 1981). Although this study did not use the MTMM approach, convergent validity was examined through three tests:

- *Test 1*: internal consistency validity discussed earlier is a type of convergent validity, which could be examined by Cronbach's alpha (greater than 0.7) and construct reliability (greater than 0.7) to assure there was at least moderate correlations among the measurement items to indicate indicators are measuring the same construct.
- *Test 2*: AVE, a measure of the error-free variance of a set of items, is used to measure convergent validity indicating that the shared amount of variance that is captured by the latent viable in relation to the amount of variance due to its measurement error (Dillon & Goldstein 1984; Fornell & Larcker, 1981). Fornell and Larcker (1981) suggested that adequate demonstration of convergent validity would be an AVE of 0.5 or above (variance explained by the construct is greater than the measurement error). AVE for X with indicators $x_1, x_2, ..., x_n$ can be computed as:

$$AVE = \frac{\Sigma[\lambda_i^2](X)}{\Sigma[\lambda_i^2](X)+\Sigma[(\varepsilon_i)]} \quad (2)$$

where λ_i is unconstrained factor loading of x_i on X, Var denotes variance, ε_i is the measurement error of x_i, and Σ denotes a sum.

- *Test 3*: convergent validity is evidenced by statistically significance and the adequate size of factor loadings with correct sign to indicate convergence of items to the common trait (Anderson & Gerbing, 1988; Bagozzi & Yi, 1991).

Discriminate Validity

Discriminate validity is "the degree to which measures of distinct concepts differ" (Bagozzi & Philips, 1982). Analysis should be conducted to confirm that indicators designed to measure different constructs are in fact measuring different constructs. That is, items from one factor should not correlate too closely with items from a different scale to indicate discriminate validity. Discriminate validity was assessed by the following procedures:

- *Test 1*: Correlation methods. The correlation between factors above 0.80 or 0.85 implies poor discriminate validity (Brown, 2006; Garson, 2008). This is a less stringent test of discriminate validity.
- *Test 2*: Using Fornell and Larcker's (1981) criteria, AVE was compared with the shared variance between all possible pairs of constructs. That is, the square root of the AVE should be greater than the absolute value of standardized correlation of two constructs (Garson, 2008). Discriminate validity was supported when an AVE is greater than the shared inter-construct variance.

- *Test 3*: Nested models. A series of nested models based on CFA models were specified that constrained the correlation between constructs to one (i.e., set two factors are identical by using Phi-matrix constraint, variance-covariance matrix constraint; Anderson & Gerbing, 1988; Bagozzi, Yi & Phillips, 1991). These constrained models were compared to baseline models that allowed parameters to correlate freely. If two models do not differ significantly on a chi-square difference test, this suggests that there is no discriminate validity between the two constructs. This method is considered a more rigorous test for discriminate validity (Garson, 2008). The following table summarizes the measurement tests and criteria thresholds used in this study.

Table 7 Measurement Test Method

Construct Test	Test Method
Content validity	Pre-test
Reliability	Internal Consistency, Unidimensionality, Construct Reliability
Internal Consistency	Item-to-total correlation; Alpha, Construct Reliability
Convergent Validity	Average Variance Extracted, Factor Loadings, Internal Consistency
Discriminate Validity	Correlation, Nested Models, Comparison between Average Variance Extracted and Shared Variance

Measurement Evaluation Criteria

CFA is a type of SEM that deals with the relationships between observed measures of indicators (i.e., test items, test scores, ratings) and latent variables. An acceptable fitted CFA solution should be evaluated on the basis of three main aspects: (1) overall goodness of fit; (2) specific points of ill fit; and (3) size and statistical significance of the parameter estimates (Brown, 2006, p.113). Researchers suggest using multiple indices to evaluate model fit and at least one index from each fit class (absolute, parsimony, comparative) should be included (Kline, 2005). To evaluate measurement criteria and model fit in this study, the following list of metrics serves as important guidelines:

1. Model Chi-square ($\chi 2$) presents an absolute measure of fit indicating the degree to which the estimated model sufficiently reproduces the sample variances and covariances (Brown, 2006). A statistically significant chi-square indicates that model estimates do not reproduce the sample variance and covariances well. The $\chi 2$ difference test is widely used as a measure of incremental fit for comparing nested models, that is, testing for measurement invariance or nested models. Chi-square is actually a "badness-of-fit" index because statistically significant $\chi 2$ indicates that the model does not fit the data (Kline, 2005). Chi-square is sensitive to and inflated by sample size. For this reason, other alternative fit indices (e.g., CFI, TLI, RMSEA) are recommended for the evaluation of model fit besides the chi-square index.

2. Chi-square Ratio (CMIN/*df*) is the chi-square fit index divided by degrees of freedom. A ratio range between two to five is considered adequate by some scholars (Hair, et al., 1998), but other researchers (e.g., Kline, 2005) have suggested two to three or less as a more conservative threshold.

3. Root Mean Square Error of Approximation (RMSEA; Steiger & Lind, 1980) is a parsimony-adjusted index where a simpler model will be favored given two models with similar overall explanatory power (Kline, 1998). RMSEA is also an "error of approximation" index because it measures the degree to which a model fits reasonably well in the population (Brown, 2006). A common rule of thumb is that RMSEA ≤ 0.08 indicates adequate model fit, RMSEA ≤ 0.05 suggests good model fit, but models with RMSEA ≥ 0.1 should be rejected (Browne & Cudeck, 1993).

4. Standardized Root Mean Square Residual (SRMR) is a measure of the mean absolute correlation residual and based on the overall difference between the observed and predicted correlation (Kline, 2005). Values of the SRMR less than 0.10 indicate good model fit.

5. The Comparative-fit Index (CFI; Bentler, 1990) is an incremental fit index comparing the fit of an existing model with a model assuming no relationships among the variables. As a rule of thumb, CFI, and other incremental indexes, should be equal to or greater than 0.90 to accept the model (0.95 or higher for a close fit; Hu & Bentler, 1999).

6. The Tucker-Lewis Index (TLI; Tucker & Lewis, 1971; also referred to as the non-normed fit index) is another well-behaved incremental fit index. TLI incorporates a measure of parsimony by including a penalty function for adding freely estimated parameters that do not improve the model fit. Similar to CFI, TLI values ranging between 0.90 and 0.95 may indicate acceptable model fit (Bentler, 1990).

Findings of Measurement Validation

M-plus version 5 (Muthén & Muthén, 2005) was used to specify and estimate all measurement models based on a maximum likelihood (ML) minimization function. The reason ML is commonly used to estimate EFA and CFA is that it contains the ability to determine the precision of parameter estimates by considering standard errors (Brown, 2006). The nine constructs in this study's proposed structural model were grouped and estimated in four separate measurement models, each of which contained a subset of theoretically relevant constructs. This approach allowed similar constructs to be examined simultaneously and thereby ensures distinctions among the theoretically similar constructs (Campbell & Fiske, 1959). The first measurement model assessed the group norms construct including descriptive and injunctive norms. The second model measured the social sanction construct, including perceived reward and perceived punishment. The third model evaluated the evaluations construct on the effect of drinking, including perceived benefit and perceived cost of drinking. Finally, the fourth model

tested the drinking decision construct, including drinking intention and drinking behavior. The descriptions of final measurement items for each scale are presented in Table 8.

Model 1: Social Norms

Based on prior evidence and theory bearing on the five measurement models proposed in this study, model 1, social norms construct, was a two-factor model in which items of *mdrink* and *mocasio* loaded onto the latent variable of descriptive norms, and in which items of *mwknd*, *mdrinkp*, *mdrunke* loaded onto the latent variable of injunctive norms. As shown in Table 8, the results of CFA indicated an overall good fit of the measurement model to the data with $\chi 2$ of 4.70 with 4 degrees of freedom ($p = 0.32$) and a low $\chi 2/df$ ratio of 1.78, which was within the recommended tolerance range (Bollen, 1989; Hair et al., 1998). Model fit was further evaluated by SRMR, RMSEA, CFI, and TLI. Using multiple indices provide a more conservative and reliable evaluation of the solution. Each of the overall goodness-of-fit indices suggested that the two-factor model fit the data well, SRMR = 0.01, RMSEA = 0.02, CFI = 0.99, and TLI = 0.99 (Bentler, 1990). Results of standardized residuals (i.e., *z* scores) indicated the majority of items had no localized points of ill fit in the solution. That is, the largest standardized residual (3.01) was slightly larger than the cutoff value of 2.58, which corresponds to the 0.01 alpha levels (Byrne, 1998).

All freely estimated unstandardized parameters for two factors were positive and statistically significant ($p < 0.001$) with factor loadings 0.74 and 0.78 for the latent variable of descriptive norms; and loadings of 0.77, 0.93 and 0.97 for the latent variable of injunctive norms. The measurement model contained no double-loading indicators and all measurement error was presumed to be uncorrelated. In addition, the results of R^2 (ranged from 0.55 to 0.94) revealed that the indicators were strongly related to their purported latent factors, consistent with the

Table 8 Results of CFA Measurement Model Fit

Model		Indicator	$\chi 2$ (*d.f.*, p-value)	CFI[1]	TLI	RSMEA	SRMR
Group[2] Norms	Descriptive Norms	Number of days per week the majority of members drink alcohol	4.70 (4, p =. 32)	.99	.99	.02	.01
		Average number of alcoholic beverages the majority of members drink at one occasion					
	Injunctive Norms	Typical group member approves of drinking on weekends					
		Typical group member approves of getting drunk at parties					
		Typical group member approves of getting drunk at weekend					
Social Sanctions	Reward	If I drank at a party, my group members would generally think I am being sociable.	35.02 (12, p < .001)	.99	.97	.07	.03
		If I drank at a party, my group members would generally think I fit in with the group					
		If I drank at a party, my group members would generally think I am cool					
		If I drank at a party, my group member would generally think I have made the party					
	Punishment	If I did not drink alcohol at a party, someone from my organization would					
		If I did not drink alcohol at a party, someone from my organization would tease					
		If I did not drink alcohol at a party, someone from my organization would					
		If I did not drink alcohol at a party, someone from my organization would ask					
Drinking Decision	Intention	Likelihood of having alcohol over the next [illegible]	22.66 (8, p < .01)	.99	.99	.06	.03
		Likelihood of having alcohol over the next 30 days					
	Behavior	Number of times had five or more drinks at one sitting					
		Number of alcohol consumed during the past week					
		On average, number of alcohol consume on					
		On average, number of alcohol consume on [illegible]					
Cost-benefit Evaluation	Perceived Benefit	If I were under the influence of alcohol, I would act sociable	10.53 (8, p = .22)	.99	.99	.03	.02
		If I were under the influence of alcohol, it would be easier to talk to people					
		If I were under the influence of alcohol, I would feel peaceful					
	Perceived Cost	If I were under the influence of alcohol, I would feel moody					
		If I were under the influence of alcohol, I would be clumsy					
		If I were under the influence of alcohol, I would feel dizzy					

[1] CFI = Comparative Fit Index; TLI = Tucker-Lewis Index; RSMEA= Root Mean Square Error of Approximation; SRMR = standardized Root Mean Square Residual; and *d.f.*= degrees of freedom)

[2] Injunctive and descriptive norms were combined into one factor named group norms for further analysis due to poor discriminate validity.

assumption that the scales are reliable indicators of the constructs of injunctive and descriptive norms (Brown, 2006). In addition, the results of CFA offered evidence for adequate construct reliability and convergent validity for both injunctive and descriptive norms as indicated by satisfactory construct reliability levels (> 0.7), Cronbach's alphas (> 0.7) and AVE s (> 0.5).

Discriminate validity was evaluated by the correlation between the two factors and by comparing AVE of each scale with their shared variance. The correlation between the latent variable of injunctive and descriptive revealed a high correlation ($r = 0.84$). The AVE core of injunctive norms (0.68) was smaller than the factor shared variance (0.71). The AVE score of descriptive norms (0.76) was only slightly larger than the shared variance (0.64) as shown in Table 6. This indicates that injunctive and descriptive norms have poor discriminate validity, thus, the two factors were combined to acquire a more parsimonious solution for further analysis (Brown, 2006). The goal of combining these two factors was not to improve the model fit, but to ensure that the fit of the more parsimonious solution was similar to the initial model assuming the initial model has a satisfactory fit.

Model 2: Social Sanctions

Based on the norms literature, rewards and punishments are considered as separate components of social sanctions (see previous chapters). The analysis of model two intends to show that the latent variables of reward and punishment, while apparently related, may be distinct from each other. A two-factor model was specified in which items of *fit, think social*, *cool* and *fun* loaded onto the latent variable of perceived rewards, and in which items of *suggest*, *pressure*, *tease* and *wrong*, loaded onto the latent variable of perceived punishment. The results of CFA did not report an acceptable fit of the measurement model to the data with $\chi 2$ of 144.36 with 19 degrees of freedom ($p < 0.0001$) and a high $\chi 2/df$ ratio of 7.59, which was not within the

recommended tolerance range (Bollen, 1989; Hair et al., 1998). Each of the overall goodness-of-fit indices suggested that the two-factor model did not fit the data well, SRMR = 0.06, RMSEA = 0.10, CFI = 0.94, and TLI = 0.91. Inspection of standardized residuals indicated four items had localized points of ill fit in the solution (e.g., standardized residual for *suggest* and *tease* was 6.06; *think social* and *suggest* was 5.72). Thus, model refinement was considered based on the determination of whether each modification made theoretical sense and aligned with the research goals. Refinements were based on modification indices, standardized residuals, item Lamba weights, and overall fit statistics. The modification index reflects an approximation of how much the overall model chi-square would decrease if the fixed parameter was freely estimated. For example, the modification index for x_1 and x_2 is 8 (Brown, 2006). This value means that if x_1 was freely estimated to cross-load on x_2, the overall model $\chi 2$ is estimated to drop by 8 units. The modification indices indicated that adding some error covariance within-factor items would improve the overall model fit. For example, items of *tease* and *suggest* (M. I. = 19.7), items of *tease* and *pressure* (M.I. = 47.8); and items of *suggest* and *think social* (M. I. = 39) demonstrated high modification indices in this data. The CFA model fit improved significantly when these items with high modification indices were allowed to co-vary. Correlating within-factor error terms is acceptable when theoretical or empirical evidence indicate that shared effects might exist between items (Anderson & Gerbing, 1984). The refined model yielded a better model fit with $\chi 2$ of 35.02 with 12 degrees of freedom ($p < 0.001$) and a low $\chi 2/df$ ratio of 2.91, which was within the recommended tolerance range. Each of the overall goodness-of-fit indices suggested that the refined model fit the data well, SRMR = 0.03, RMSEA = 0.07, CFI = 0.99, and TLI = 0.97 (see Table 8).

All freely estimated construct factor loadings were positive and statistically significant (*p*

< 0.001) with factor loadings ranged from 0.60 to 0.88 for the latent variable of reward and factor loadings ranged from 0.72 to 0.84 for the latent variable of punishment, which were consistent with factor structure predicted by theory. The measurement model contained no double-loading indicators and all measurement error was presumed to be uncorrelated. In addition, the results of R^2s (ranged from 0.53 to 0.84) revealed that the indicators were strongly related to their purported latent factors, consistent with the assumption that the two measurement models are reliable (Brown, 2006). As shown in Table 6, the results of CFA offered evidence for adequate construct reliability and convergent validity for both injunctive and descriptive norms as indicated by satisfactory construct reliability levels (> 0.7), Cronbach's alphas (> 0.7) and AVEs (> 0.5).

Discriminate validity was measured by three methods. First, correlation between the factors of reward and punishment was evaluated. Estimates from the two-factor solution indicated a moderate relationship between reward and punishment (r = 0.59). Second, discriminate validity was assessed by comparing AVE of each scale with their shared variance. Both factors' AVE scores were slightly lower than their shared variances (for reward, AVE = 0.71 < shared variance = 0.77; for punishment, AVE = 0.74 < shared variance = 0.77). Finally, the nested model was further compared to the constrained model (i.e., perfectly correlated) with the freely correlated model. The chi-square difference test reported a significant difference in χ^2 with one degree of freedom change ($\Delta^{\chi 2}$= 211.25, p <. 001), that is, the baseline model where factor covariance was freely estimated proved a significantly better fit to the data than the nested model (see Table 9). With these results, factors of reward and punishment show discriminate validity.

Table 9 Results of Discriminate Validity Analysis: Chi-square Difference Test

Paired Measurement Models	$\chi 2$ (*d.f.*) (*p*-value) (Unconstrained)	$\chi 2$ (*d.f.*) (*p*-value) (Constrained)	$\Delta\chi 2$	*P*-value
Group Norms – Cost	$\chi 2$ (19) = 65.33 (p <. 0001)	$\chi 2$ (20) = 352.76 (p <. 0001)	287.43	<.05
Group Norms – Benefit	$\chi 2$ (19) = 63.60 (p <. 0001)	$\chi 2$ (20) = 605.28 (p <. 0001)	541.68	<.05
Group Norms – Reward	$\chi 2$ (26) = 227.70 (p <. 0001)	$\chi 2$ (27) = 680.58 (p <. 0001)	422.88	<.05
Group Norms - Punishment	$\chi 2$ (26) = 181.35 (p <. 0001)	$\chi 2$ (27) = 630.78 (p <. 0001)	449.43	<.05
Group Norms - Communication	$\chi 2$ (13) = 84.38 (p <. 0001)	$\chi 2$ (14) = 385.20 (p <. 0001)	300.82	<.05
Group Norms - Intention	$\chi 2$ (13) = 80.97 (p <. 0001)	$\chi 2$ (14) = 950.87 (p <. 0001)	869.90	<.05
Group Norms - Behavior	$\chi 2$ (26) = 159.84 (p <. 0001)	$\chi 2$ (27) = 725.23 (p <. 0001)	565.39	<.05
Cost – Benefit	$\chi 2$ (8) = 10.53 (p =. 22)	$\chi 2$ (9) = 294.40 (p <. 0001)	283.87	<.05
Cost – Reward	$\chi 2$ (13) = 26.99 (p =. 01)	$\chi 2$ (14) = 318.44 (p <. 0001)	291.45	<.05
Cost – Punishment	$\chi 2$ (13) = 37.25 (p <. 0001)	$\chi 2$ (14) = 323.60 (p <. 0001)	286.35	<.05
Cost - Communication	$\chi 2$ (4) = 9.75 (p = .05)	$\chi 2$ (5) = 397.76 (p <. 0001)	388.01	<.05
Cost – Intention	$\chi 2$ (4) = 9.79 (p = .04)	$\chi 2$ (5) = 951.98 (p <. 0001)	942.19	<.05
Cost – Behavior	$\chi 2$ (13) = 17.76 (p =. 17)	$\chi 2$ (14) = 295.99 (p <. 0001)	278.23	<.05
Benefit - Reward	$\chi 2$ (13) = 68.43 ((p <. 0001)	$\chi 2$ (14) = 606.75 (p <. 0001)	538.32	<.05
Benefit – Punishment	$\chi 2$ (13) = 63.84 (p <. 0001)	$\chi 2$ (14) = 653.47 (p <. 0001)	589.63	<.05
Benefit - Communication	$\chi 2$ (4) = 8.76 (p = .07)	$\chi 2$ (5) = 352.31 (p <. 0001)	343.55	<.05
Benefit – Intention	$\chi 2$ (4) = 11.48 (p = .02)	$\chi 2$ (5) = 798.54 (p <. 0001)	787.06	<.05
Benefit – Behavior	$\chi 2$ (13) = 27.25 (p <. 0001)	$\chi 2$ (14) = 514.91 (p <. 0001)	487.66	<.05
Reward – Punishment	$\chi 2$ (12) =35.02 (p <. 001)	$\chi 2$ (13) = 246.27 (p <. 0001)	211.25	<.05
Reward - Communication	$\chi 2$ (8) = 70.52 (p <. 0001)	$\chi 2$ (9) = 424.32 (p <. 0001)	353.80	<.05
Reward – Intention	$\chi 2$ (8) = 95.09 (p <. 0001)	$\chi 2$ (9) = 996.81 (p <. 0001)	901.72	<.05
Reward – Behavior	$\chi 2$ (19) = 73.30 (p <. 0001)	$\chi 2$ (20) = 737.98 (p <. 0001)	664.68	<.05
Punishment - Communication	$\chi 2$ (8) = 74.19 (p <. 0001)	$\chi 2$ (9) = 436.44 (p <. 0001)	362.25	<.05
Punishment – Intention	$\chi 2$ (8) = 76.89 (p <. 0001)	$\chi 2$ (9) = 1024.34 (p <. 0001)	947.45	<.05
Punishment - Behavior	$\chi 2$ (19) = 93.77 (p <. 0001)	$\chi 2$ (20) = 752.73 (p <. 0001)	658.96	<.05
Communication – Intention	$\chi 2$ (1) = 2.39 (p =. 12)	$\chi 2$ (2) = 318.44 (p <. 0001)	316.05	<.05
Communication - Behavior	$\chi 2$ (8) = 5.51 (p =. 70)	$\chi 2$ (14) = 385.20 (p <. 0001)	352.69	<.05
Intention - Behavior	$\chi 2$ (8) = 22.66 (p <. 01)	$\chi 2$ (14) = 454 (p <. 001)	431.34	<.05

Model 3: Cost-benefit Evaluation

Model 3, cost-benefit evaluation, consists of the latent variable of perceived cost of drinking and the latent variable of perceived benefit of drinking. A two-factor model was specified in which items of *rmoody*, *rclum*, and *rdizzy* loaded onto the latent variable of perceived cost, and in which items of *social*, *talk*, and *peace* loaded onto the latent variable of perceived benefits. As presented in Table 8, the results of CFA reported an overall good fit of the measurement model to the data with $\chi 2$ of 10.53 with 8 degrees of freedom ($p = 0.22$) and a low $\chi 2/df$ ratio of 1.32, which was within the recommended tolerance range (Bollen, 1989; Hair et al., 1998). Each of the overall goodness-of-fit indices suggested that the two-factor model fit the data well, SRMR = 0.02, RMSEA = 0.03, CFI = 0.99, and TLI = 0.99 (Bentler, 1990). Results of standardized residuals indicated no localized points of ill fit in the solution. That is, the largest standardized residual (2.38) was smaller than cutoff value of 2.58 (Byrne, 1998). No relationships among the indicators were substantially under - or overestimated by the parameter estimates.

All freely estimated unstandardized parameters for two factors were positive and statistically significant ($p < 0.001$) with factor loadings 0.56, 0.86, and 0.93 for the latent variable of benefit and factor loadings, 0.51, 0.74, and 0.82 for the latent variable of cost. The measurement model contained no double-loading indicators and all measurement error was presumed to be uncorrelated. In addition, the results of R^2 (ranged from 0.26 to 0.80) revealed that the majority of indicators were strongly related to their purported latent factors except for the item of *rmoody* with a low $R^2 = 0.26$. As presented in Table 6, the results of CFA offered evidence for adequate construct reliability and convergent validity for both factors as indicated by satisfactory construct reliability levels (> 0.7), Cronbach's alphas (> 0.7) and AVEs (> 0.5).

Finally, discriminate validity was evaluated by correlation between the factors of cost and benefit and by comparing AVE of each scale with their shared variance. Estimates from the two-factor solution indicated a low correlation between cost and benefit (r = -0.17). In addition, both factors meet the criterion of AVE greater than shared variance (for cost, AVE = 0.69 > shared variance = 0.03; for benefits, AVE = 0.79 > shared variance = 0.03; see Table 6). Nested models were further examined by comparing the constrained model (i.e., perfectly correlated) with the freely correlated model. The chi-square difference test reported a significant difference in $\chi 2$ with one degree of freedom change ($\Delta\chi 2 = 283.87$, $p < .001$), that is, the baseline model where factor covariance was freely estimated proved a significantly better fit to the data than the nested model (see Table 9). These findings suggest that the factors of cost and benefit have discriminate validity.

Model 4: Drinking Decision

The final measurement model, drinking decision, includes the latent variable of drinking intention and the latent variable of drinking behavior. A two-factor model was specified in which items of *intent14* and *intent30* loaded onto the latent variable of intention, and in which items of *fivemore*, *lastweek*, *weeknd* and *weekday* loaded onto the latent variable of behavior. As displayed in Table 8, the results of CFA reported an overall acceptable fit of the measurement model to the data with $\chi 2$ of 22.67 with 8 degrees of freedom ($p < 0.01$) and a low $\chi 2/df$ ratio of 2.83, which was within the recommended tolerance range (Bollen, 1989; Hair et al., 1998). Each of the overall goodness-of-fit indices suggested that the two-factor model fit the data well, SRMR = 0.03, RMSEA = 0.06, CFI = 0.99, and TLI = 0.99 (Bentler, 1990). Results of standardized residuals indicated most items had no localized points of ill fit in the solution with the exception of items of *weekday* and *intent30* (standardized residuals = 4.0).

All freely estimated unstandardized parameters for two factors were positive and statistically significant ($p < 0.001$) with factor loadings 0.99, and 0.95 for the latent variable of intention and factor loadings 0.66, 0.78, 0.83, and 0.93 for the latent variable of behavior. The measurement model contained no double-loading indicators and all measurement error was presumed to be uncorrelated. In addition, the results of R^2 (ranged from 0.66 to 0.99) revealed that the majority of indicators were strongly related to their purported latent factors. As shown in Table 6, the results of CFA offer evidence for adequate construct reliability and convergent validity for both factors as indicated by satisfactory construct reliability levels (> 0.7), Cronbach's alphas (> 0.7) and AVEs (> 0.5).

Discriminate validity was evaluated by examining the correlation between the two factors and by comparing AVE of each scale with their shared variance. Estimates from the two-factor solution indicated a moderate to strong correlation between intention and behavior ($r = 0.73$), close to the cut-off point of 0.80 for discriminate validity. Based on Theory of Reasoned Action (Ajzen & Fishbein, 1980), however, the construct of intention predicts human behavior. Therefore, it was reasonable to find a strong relationship between these two constructs. In addition, both constructs met the criterion of AVE greater than shared variance, indicating the evidence of discriminate validity (for intention, AVE = 0.76 > shared variance = 0.53; for behavior, AVE = 0.69 > shared variance = 0.53; see Table 6). Finally, nested models were examined by comparing the constrained model (i.e., perfectly correlated) with the freely correlated model. The chi-square difference test reported a significant difference in χ2with one degree of freedom change ($\Delta\chi2 = 443.47$, $p < 0.001$), that is, the baseline model where factor covariance was freely estimated proved a significantly better fit to the data than the nested model (see Table 9). All of these findings suggest that latent variables of intention and behavior have

discriminate validity. Table 10 presents the correlation metric among main constructs in this study.

Discriminate Validity across Model Groups

In addition to examining discriminate validity of constructs within each model group, discriminate validity for constructs across model groups were also assessed (see Table 11). Out of 25 comparisons examining each construct, all of them met the stated criteria where AVE was greater than the shared variance.

Table 10 Correlation Metric among Main Constructs

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Group norms (1)		-0.18**	0.33***	0.88***	0.69***	0.66***	0.48***	0.57***	0.29***	0.29***	0.06
Cost (2)	- 0.18***		- 0.22**	- 0.12***	- 0.15**	- 0.21***	- 0.21***	- 0.21***	- 0.11*	- 0.05	- 0.04
Benefit (3)	0.33***	-0.22***		0.45***	0.13*	0.38***	0.53***	0.44***	0.25***	- 0.01	0.04
Reward (4)	0.88***	-0.12***	0.45***		0.66***	0.55***	0.54***	0.48***	0.31***	0.13*	0.06
Punishment (5)	0.69***	-0.15**	0.13*	0.66***		0.38***	0.22***	0.30***	0.004	0.24***	0.09
Communication (6)	0.66***	-0.21***	0.38***	0.55***	0.38***		0.51***	0.67***	0.38***	0.12*	- 0.01
Intent (7)	0.48***	-0.21***	0.53***	0.54***	0.22***	0.51***		0.74***	0.28***	0.11*	- 0.01
Behavior (8)	0.57***	-0.21***	0.44***	0.48***	0.30***	0.67***	0.74***		0.27***	0.30***	0.01
Greek (9)	0.29***	-0.11*	0.25***	0.31***	0.004	0.38***	0.28***	0.27***		- 0.11*	- 0.24***
Gender (10)	0.29***	-0.05	- 0.01	0.13*	0.24***	0.12*	0.11*	0.30***	- 0.11*		0.14**
Athlete (11)	0.06	-0.04	0.04	0.06	0.09	- 0.01	- 0.01	0.01	- 0.24***	0.14**	

Note: * p <0.05, **p<0.01; *** p<0.001.

Note: Greek, gender and athlete were dummy variables where 1 = male, 1 = belongs to Greek organizations and 1 = belong to athlete.

Table 11 Discriminate Validity Test across Model Group: Comparisons Between Average Variance Extracted and Shared Variance

Paired Model	AVE for the first variable	Shared Variance
Group norms – Reward	.71	.38
Group norms – Punishment	.71	.29
Group norms – Cost	.71	.01
Group norms – Benefit	.71	.11
Group norms – Communication	.71	.29
Group norms – Intent	.71	.18
Group norms – Behavior	.71	.21
Reward - Cost	.71	.01
Reward – Benefit	.71	.08
Reward – Communication	.71	.13
Reward – Intent	.71	.10
Reward - Behavior	.71	.08
Punishment – Cost	.74	.02
Punishment – Benefit	.74	.01
Punishment – Communication	.74	.10
Punishment – Intention	.74	.05
Punishment – Behavior	.74	.05
Cost – Communication	.69	.02
Cost- Intention	.69	.02
Cost - Behavior	.69	.03
Benefit - Communication	.79	.16
Benefit – Intention	.79	.28
Benefit – Behavior	.79	.18
Communication – Intention	.81	.25
Communication - Behavior	.81	.46

Note: Injunctive and descriptive norms are combined into one factor, group norms.

Results of Hypothesis Testing

Two-step SEM approach

M-plus version 5 (Muthén & Muthén, 2005) was used to estimate the SEM and path analysis for hypothesis testing. This study included both measurement models and structural models to test hypothesis (MacKinnon, 2008). While a measurement model represents how observed indicators are related to a latent construct, a structural model specifies the relationship between independent, mediating and dependent variables. Specifically, a two-step SEM approach was conducted by using Anderson and Gerbing's recommendations (1988). First, a measurement model with all variables intercorrelated was specified to assess the construct validity of the proposed model. The overall fit of the measurement model indicated a close fit between the data and the specified model with $\chi 2$ of 698.89 with 344 degrees of freedom ($p <$ 0.0001), CFI = 0.96, TLI = 0.94, RMSEA = 0.05 and SRMA = 0.06. Second, structural relations among five exogenous variables (group norms, gender, Greek membership, international student, and athlete), five intervening variables (i.e., cost, benefit, reward, punishment, and communication) and two endogenous variables (i.e., intention and behavior) were examined in the model.

Model Specification and Evaluation of Model Fit

All structural equation models were estimated from covariance matrices using maximum likelihood estimation procedure with manifest (measured) variables. All exogenous variables were covaried. For each model, control variables (i.e., Greek membership, gender and athletes) were included by using them as covariates in all regression models to control for confounding effects in the path analysis. Model fit for each of the nested structural equation model was

evaluated by chi-square test, goodness-of-it and comparative fit indices.

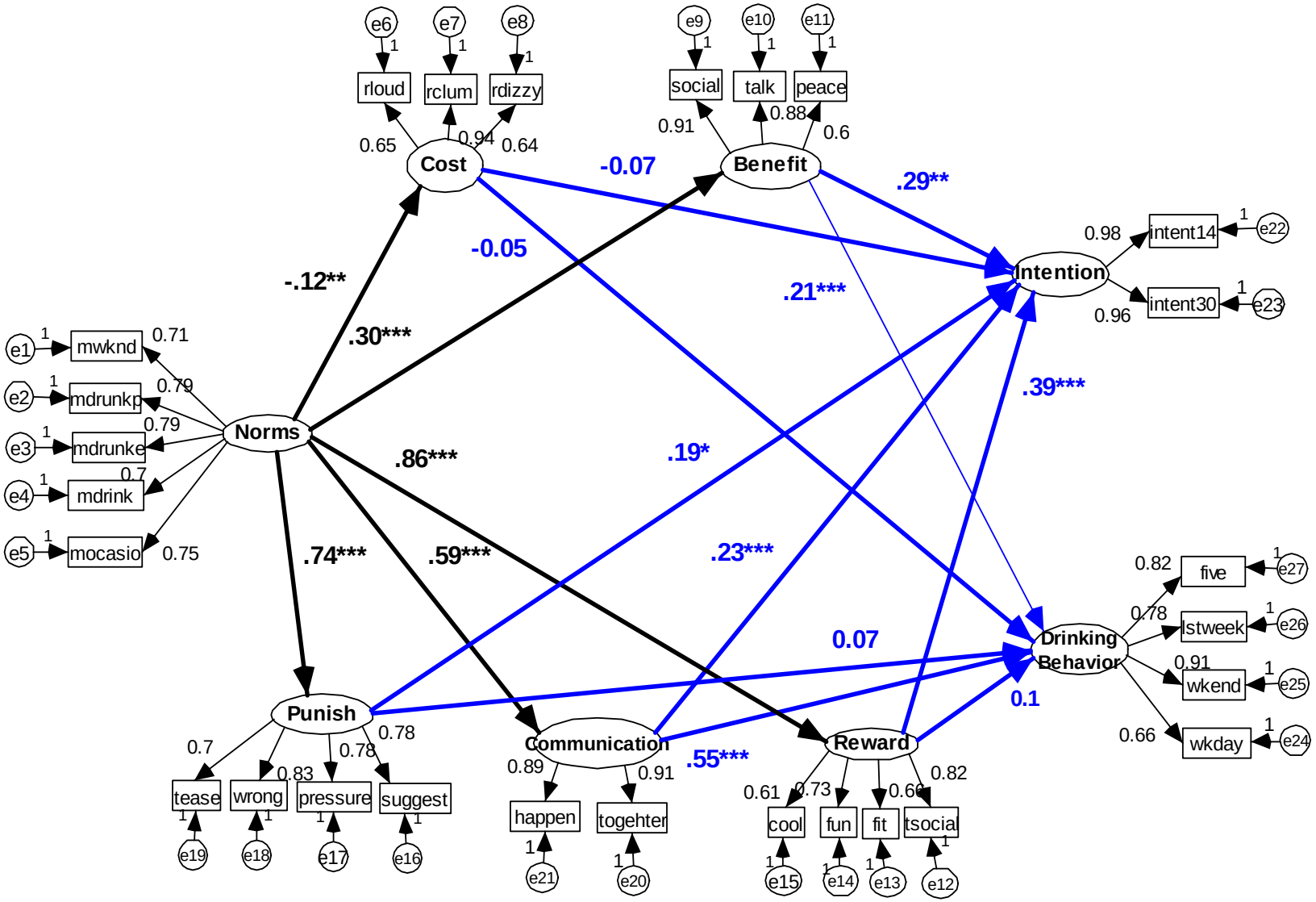
Findings on Control Variables

Results from path analysis indicated that gender was a significant factor of drinking intention and behavior. Overall, males were more likely to drink alcohol ($B = .24$, $p < 0.001$) than females; however, gender was not related to drinking intention. Being affiliated with Greek organizations or athlete teams was not significantly associated with either drinking intention or behavior. Greek students, however, were more likely to communicate with group members about getting together to drink, discuss what happened after drinking than non-Greek students ($B = 0.21$, $p < 0.001$). In addition, Greek students perceived higher level of the benefits of drinking ($B = 0.17$, $p < 0.01$) and were less likely to feel they will be punished if they did not drink alcohol at a party than non-Greek students ($B = -0.21$, $p < 0.001$). Being on an athletic team was not significantly related to drinking intention, drinking behavior, perceived cost, perceived benefit of drinking and communication about drinking.

Hypothesis 1a and 1b – Norms and Cost-benefit Judgments

Hypotheses 1a and 1b address the relationship between group drinking norms and cost-benefit judgments on drinking. These two hypotheses assume that group norms that approve drinking increase an individual's level of the perceived benefit of drinking (i.e., particular effects of drinking are good), but decrease the level of perceived cost resulting from drinking (i.e., particular effects of drinking are bad). As seen in Figure 5, results from path analysis reported a

Figure 5 Norms, Cost-benefit Judgment, Sanctions, Communication and Drinking Decision Model (SEM)
(Control variables not shown for clarity)



positive and significant coefficient between norms and perceived benefit ($B = 0.30$, $p < 0.001$), but a negative relationship between norms and perceived cost of drinking ($B = -0.12$, $p < 0.01$). These results suggest that the more an individual feels that their group members approve drinking, the more likely they will perceive a particular effect of drinking is good, but less likely to perceive a particular effect of drinking is bad. As such, hypothesis 1a and 1b were supported.

Hypothesis 2a, 2b and 2c – Mediation Effects of Perceived Cost

Hypothesis 2a predicts that perceived cost of drinking decreases the levels of drinking intention and behavior. As shown in Figure 5 and Table 12, this hypothesis was not supported because perceived cost was not significantly related to either drinking intention or behavior. Hypothesis 2b and 2c assume the full mediation effects of norms on drinking intention and behavior through perceived cost. The mediator, an intervening variable, exists if the independent variable causes the mediate variable in which causes the dependent variable (MacKinnon, 1994).

In order to test the mediation effect, this study used the widely accepted procedures that were introduced by Baron and Kenny (1986). Baron and Kenny (1986) proposed that the mediation effect is supported depending on four criteria: 1) the independent variable (X) must affect the dependent variable (Y), coefficient c; 2) X must affect the mediator (M), coefficient a; 3) M must affect Y when X is controlled, coefficient b; and 4) the effect of X on Y controlling for M (path c') is zero (see Figure 6). In addition, a nested model constraining the coefficient for the path from X to Y to zero was used to test for mediation effects in this study (Kline, 2005). If the overall fit of the constrained model is not significantly worse than the freely estimated model, the mediated relationship between X and Y is supported.

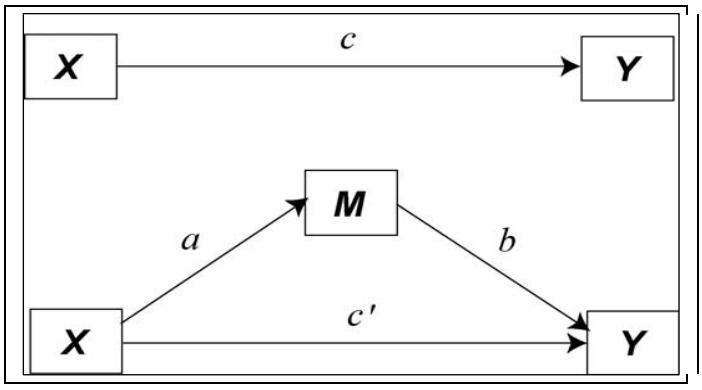


Figure 6: A Single Mediation Model

These procedures demonstrate the criteria for complete mediation. However, partial mediation is supported if the path from X to Y when controlling mediator is reduced in absolute size, but still significantly different from zero. Indirect effects (i.e., mediation) were further tested to determine whether the coefficients were significantly different from zero by using the Sobel test, the product of coefficient method (1982). The Sobel's formula is described as:

$$SE = \sqrt{b^2 SE_a^2 + a^2 SE_b^2} \tag{3}$$

Sobel's (1982) test requires a large sample size and is based on coefficients' symmetric properties which assumes normally distribution of indirect effects, therefore, asymmetric confidence limits are more accurate because mediation effects do not often normally distribute (MacKinnon, 2008)[30]. Recently, many statistical methodologists have recommended bootstrapping as one of the better methods for testing mediation (e.g., MacKinnon, Lockwood, & Williams, 2004). If zero is outside the confidence intervals, the mediation effect is statistically significant.

[30]The confidence intervals in the Sobel's test assume that the upper and lower limits are equal among, above, and below, the mediated effect (MacKinnon, 2008, p.53).

Hypothesis 2b suggests that perceived cost of drinking fully mediates the relationship between group norms and drinking intention. Similar to hypothesis 2c, the perceived cost of drinking was predicted to mediate the norm-behavior relation. That is, group norms were assumed to have direct effects on the perceived cost of drinking and indirect effects on drinking intention and behavior through perceived cost. Results from the path analysis indicated that both indirect effects of norms on drinking intention and behavior through perceived cost were not significant based on the Sobel test, SEM significant test, and biased-corrected bootstrap 95% confidence intervals[31]; therefore, Hypothesis 2b and 2c were not supported (see Table 12).

Table 12 Results of Path Coefficients and Indirect Effects

Exogenous Variable *X*	Mediator *M*	Endogenous Variable *Y*	Path Coefficient *X*→*M*, *a*	Path Coefficient M→Y, *b*	Indirect Effect (*a***b*)	Significance of (*a***b*), Sobel *Z*	BC Bootstrap 95% CI
Norms	Cost	Intention	-0.12**	-0.07	0.01	1.39	-.01 .07
Norms	Benefit	Intention	0.30***	0.29**	0.09***	3.54***	.07 .26
Norms	Reward	Intention	0.86***	0.39***	0.34***	3.86***	.20 .96
Norms	Punishment	Intention	0.74***	0.19*	0.14*	2.31*	.01 .55
Norms	Communication	Intention	0.59***	0 .23***	0.14***	3.63***	.01 .39
Norms	Cost	Behavior	-0.12**	-0.05	0.01	1.00	-.01 .06
Norms	Benefit	Behavior	0.30***	0.21***	0.06**	2.99**	.06 .19
Norms	Reward	Behavior	0.86***	0.10	0.09	1.13	-.08 .51
Norms	Punishment	Behavior	0.74***	0.07	0.05	0.98	-.32 .08
Norms	Communication	Behavior	0.59***	0.55***	0.33***	6.28***	.32 .68
Model fit	$\chi 2$ (*df*)	$\chi 2$ ratio	*P* value	CFI	TLI	RMSEA	SRMR
	716.50(352)	2.04	0.0000	0.95	0.94	0.05 (90% C.I. .043 -.053)	0.06

Note 1: **p* < 0.05; ** *p* < 0.01; ****p* < 0.001.
Note 2: 95% confidence intervals were obtained through performing 5000 bootstrap re-sampling operations. Control variables are gender, Greek membership and athlete

[31]Biased-corrected bootstrap is a resampling method in that the difference between the observed sample mediated effect and the average mediated effect in the bootstrap distribution are used to correct the percentiles in the bootstrapped distribution (MacKinnon, 2008; p.335).

Hypothesis 3a, 3b and 3c – Mediation Effects of Perceived Benefit

Hypothesis 3a suggests that the perceived benefit of drinking increases levels of drinking intention and behavior. The structural paths demonstrated a positive association between perceived benefit and drinking intention ($B = 0.29$, $p < 0.01$) and a positive association between perceived benefit and drinking behavior ($B = 0.21$, $p < 0.001$).

Hypothesis 3b and 3c address the mediation effects of the perceived benefit of drinking. That is, perceived benefit was assumed to fully mediate the relationship between group norms and drinking intention (hypothesis 3b); and the relationship between group norms and drinking behavior (hypothesis 3c). As seen in Table 12, three path coefficients including one from norms to benefit ($B = 0.30$, $p < 0.001$), one from benefit to drinking intention ($B = 0.29$, $p < 0.01$) and one path from benefit to drinking behavior ($B = 0.21$, $p < 0.001$) showed significant relationships. In addition, perceived benefit ($B = 0.09$, $p < 0.01$) was a significant mediator of norms and drinking intention and of norms and behavior ($B = 0.06$, $p < 0.01$). Both the Sobel test and BC bootstrap 95% confidence intervals reported the indirect effects of perceived benefit were significantly different from zero. The chi-square difference test showed a significant difference in χ_2 with one degree of freedom change ($\Delta\chi 2 = 4.99$, $p < 0.05$), that is, the overall fit of the model with constraining the coefficient for the path from X (norms) $\rightarrow$ Y (intention) to zero provided a slightly better fit to the data than that of the freely estimated model at the 0.05 level (but not at the 0.01 level). Although the two models performed similarly, it is important to examine the direct effects of norms on drinking behavior and intention. The SEM estimation suggested that both the direct path from norms to drinking intention and the one from norms to behavior were not statistically significant when controlling for the mediator of benefit, indicating the evidence of mediation effects. In sum, all of these analyses met the criteria for the full

mediation (Baron & Kenny, 1986; MacKinnon, Lockwood, & Williams, 2004); yet, the mediation effects of perceived benefit were weak.

Hypothesis 4a, 4b, 4c and 4d – Specific Effects of Alcohol

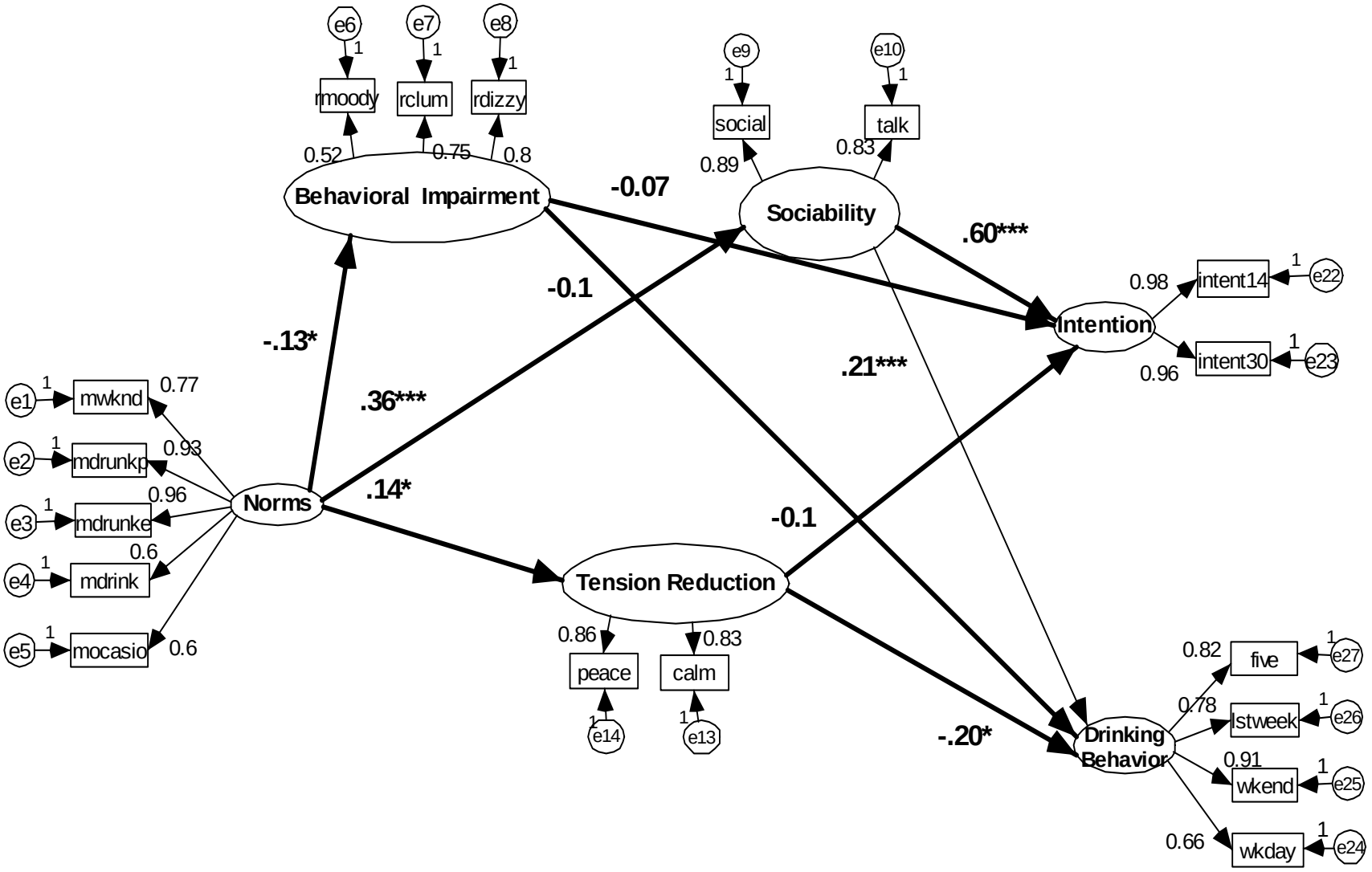
While previous hypotheses examined the impact of the perceived effects of alcohol as global evaluations, Hypothesis 4a, 4b and 4c tested the relationship between group norms and the particular effects of alcohol. That is, these three hypotheses predict group norms that approve drinking increase the levels of evaluating the social effects of alcohol as a good thing (hypothesis 4a), and increase the level of perceived tension reduction effect of alcohol as a good thing (hypothesis 4b), but decrease the level of evaluating the behavioral impairment effect of alcohol as a bad thing (hypothesis 4c). In order to test a specific influence of the alcohol effect, this study used Ham, et al.'s (2005) Brief Comprehensive Effects of Alcohol Scale (B-CEOA) to measure the evaluations of effects on alcohol and tested a three-factor model based on Ham et al. original factor loadings. Specifically, a SEM model was specified in which items of alcohol makes me sociable and makes me talk more loaded onto the latent variable of sociability, items of "alcohol makes me feel dizzy", "makes me feel clumsy", and "makes me feel moody" loaded onto the latent variable of behavioral impairment and items of "alcohol makes me feel peaceful" and of "alcohol makes me feel calm" loaded onto the latent variable of tension reduction (see Figure 7). Three negative statements (i.e., *dizzy, clumsy, moody*) were reverse coded.

The results of the SEM model reported an overall acceptable fit of the model to the data with $\chi 2$ of 291.60, 120 degrees of freedom ($p < 0.001$) and a low $\chi 2/df$ ratio of 2.43. Each of the overall goodness-of-fit indices suggested that the three-factor model fit the data well, SRMR = 0.09, RMSEA = 0.06, CFI = 0.97, and TLI = 0.96 (Bentler, 1990). All the factor loadings were

statically significant ($p < 0.001$) and ranged from 0.58 to 0.98. As presented in Figure 7, group norms increased the levels of evaluating social effect of alcohol ($B = 0.36$, $p < 0.001$) and tension reduction of alcohol ($B = 0.14$, $p < 0.05$) as good things but decreased the level of evaluating the behavioral impairment effect of alcohol as a bad thing ($B = -0.13$, $p < 0.05$). These results support hypothesis H4a, H4b and H4c.

Hypothesis 4d states that social effect of alcohol increases an individual's drinking intention and behavior. The SEM model suggested that the social effect of alcohol was a significant and positive predictor of drinking behavior ($B = 0.59$, $p < 0.001$) and intention ($B = 0.60$, $p < 0.001$). Tension reduction was negatively associated with drinking behavior ($B = -0.20$, $p < 0.05$), but not a significant predictor of intention. Effect of behavioral impairment was not related to either drinking intention or behavior. Therefore, hypothesis 4d was supported.

Figure 7 Norms, Sociability, Behavioral Impairment, Tension Reduction and Drinking Decision Model (SEM)



Hypothesis 5c, 5d, 5e, 5f – Mediation Effects of Social Sanctions

Hypothesis 5c, 5d, 5e and 5f examine the mediation effects of social sanctions including reward and punishment. That is, perceived reward was assumed to fully mediate the relationship between group norms and drinking intention (Hypothesis 5c); and the relationship between group norms and drinking behavior (Hypothesis 5d). As discussed earlier, two path coefficients including one from norms to reward ($B = 0.86$, $p < 0.001$) and one from reward to drinking intention ($B = 0.39$, $p < 0.001$) were statistically significant. Path analysis reported that perceived reward ($B = 0.34$, $p < 0.001$) was a significant mediator of norms and drinking intention. Both the Sobel test ($Z = 3.86$) and BC bootstrap 95% confidence intervals (0.20- 0.96) concluded the indirect effect of perceived reward was significantly different from zero. The chi-square difference test showed a significant difference in $\chi 2$ with one degree of freedom change ($\Delta\chi 2 = 4.99$, $p < 0.05$), that is, the overall fit of the model with constrained coefficient for the path from X (norms) → Y (intention) to zero provided a slightly better fit to the data at the alpha level 0.5 than that of the freely estimated model. In addition, the direct effect of norms on drinking intention was not statistically significant in SEM model. Therefore, perceived social reward qualified as a full mediator between norms and drinking intention (Baron & Kenny, 1986; MacKinnon, 2004). Hypothesis 5c was supported. Hypothesis 5d, however, was rejected because social reward was not a significant mediator between norms and drinking behavior.

Similar to the hypotheses regarding perceived reward, Hypothesis 5e and 5f propose that perceived punishment fully mediates the norms-intention and the norms-behavior relationships. As seen in Table 12, the path from norms to punishment for not drinking was positive ($B = 0.74$, $p < 0.001$) and the path from perceived punishment to drinking intention was also positive ($B = 0.19$, $p < 0.05$). The indirect effect of perceived punishment from norms to intention was

significant ($B = 0.14$, $p < 0.05$). In addition, the Sobel test ($Z = 2.31$) and BC bootstrap 95% confidence intervals (0.01- 0.55) concluded the indirect effect of perceived punishment was significantly different from zero. The SEM model also indicated that the direct effect of norms on drinking intention was not significant when controlling for the mediator of punishment. All of these findings suggest that perceived reward fully mediates the relationship between norms and drinking intention. Hypothesis 5e was thus supported. Hypothesis 5f was not supported because the indict effect of norms on drinking behavior through perceived punishment was not significant.

Hypothesis 6a, 6b, 6c – Norms and Communication

Hypothesis 6a proposes that group norms increase level of communication among group members. That is, group norms that approve drinking increase member's levels of talking about getting together to drink and discussing what happened after drinking. Results of path analysis reported a positive association between group norms and level of communication ($B = 0.59$, $p < 0.001$) as predicted by Hypothesis 6a.

Hypothesis 6b and 6c hypothesized that level of communication increases drinking intention and behavior, respectively. Results of the path analysis yielded a significant and positive coefficient between communication and drinking behavior ($B = 0.55$, $p < 0.001$), and a positive relationship between communication and drinking intention ($B = 0.23$, $p < 0.001$). Therefore, both hypothesis 6b and 6c were supported.

Hypothesis 6d and 6e – Mediation Effects of Communication

Hypothesis 6d and 6e examine the mediation effects of communication. Level of communication was predicted to fully mediate the relationship between group norms and

drinking intention (Hypothesis 6d); and the relationship between group norms and drinking behavior (Hypothesis 6e). As shown in Table 12, the indirect effect of norms on drinking intention through communication was significant ($B = 0.14$, $p < 0.001$). The Sobel test ($Z = 3.63$) and BC bootstrap 95% confidence intervals (0.01, 0.39) also confirmed the indirect effect of communication was significantly different from zero. Therefore the hypothesis that communication was a full mediator between norms and intention was supported.

The indirect effect of norms on drinking behavior through communication was also significant ($B = 0.33$, $p < 0.001$). The Sobel test ($Z = 6.28$) and BC bootstrap 95% confidence intervals (0.32, 0.68) also confirmed the indirect effect of communication was significantly different from zero. The chi-square difference test showed a significant difference in $\chi 2$ with one degree of freedom change ($\Delta\chi_2 = 4.99$, $p < 0.05$), that is, the overall fit of the model when constraining the coefficient for the path from X (norms) → Y (intention) to zero provided a slightly better fit to the data than that of the freely estimated model. The direct path from norms to drinking intention was not significant when controlling for the mediator of communication in the SEM model. Therefore, communication was a significant mediator between norms and drinking behavior. A summary of the hypothesis, proposed relationships and the results of testing hypotheses are presented in Table 13.

Table 13 Summaries of Hypothesis Testing Results

Hypothesis	Relationship	Result
H1a	Group norms that approve drinking alcohol increase the level of perceived benefit of drinking.	Support
H1b	Group norms decrease the level of perceived cost resulting from drinking.	Support
H2a	Perceived cost of drinking decreases levels of drinking intention and behavior.	Not support
H2b	Perceived cost of drinking mediates the relationship between group norms and drinking intention.	Not support
H2c	Perceived cost of drinking mediates the relationship between group norms and drinking behavior.	Not support
H3a	Perceived benefit of drinking increases levels of drinking intention and behavior.	Support
H3b	Perceived benefit of drinking mediates the relationship between group norms and drinking intention.	Support
H3c	Perceived benefit of drinking mediates the relationship between group norms and drinking behavior.	Not support
H4a	Group norms increase the level of evaluating the social effect of alcohol as a good thing.	Support
H4b	Group norms increase the level of evaluating the tension reduction effect of alcohol as a good thing	Support
H4c	Group norms decrease the level of evaluating the behavioral impairment effect of alcohol as a bad thing.	Support
H4d	Evaluating social effect of alcohol as a good thing increases levels of drinking intention and behavior.	Support
H5a	Group norms increase the levels of perceived social sanctions (i.e., rewards and punishments).	Support
H5b	Social rewards for drinking and punishments for not drinking increase the levels of drinking intention and behavior.	Partially Support
H5c	Social rewards for drinking mediate the relationship between group norms and drinking intention.	Support
H5d	Social rewards for drinking mediate the relationship between group norms and drinking behavior.	Not support
H5e	Social punishments for not drinking mediate the relationship between group norms and drinking intention.	Support
H5f	Social punishments for not drinking mediate the relationship between group norms and drinking behavior.	Not support
H6a	Group norms increase the level of communication (i.e., talking about getting together to drink; talking about what happened after drinking) among group members.	Support
H6b	Level of communication increases the level of drinking intention.	Support
H6c	Level of communication increases the level of drinking behavior.	Support
H6d	Level of communication mediates the relationship between group norms and drinking intention.	Support
H6e	Level of communication mediates the relationship between group norms and drinking behavior.	Support

Post-hoc Analyses

Researchers are encouraged to investigate beyond proposed models by comparing them to rival models and exploring alternate explanations (Rust, Lee & Valente, 1995). While this research did not initially hypothesize a relationship between mediators, further exploration of the issue suspects two potential effects. Specifically, this research suggests that communication is associated with social sanctions and cost-benefit judgments. Since communication is a strong predictor of drinking behavior (but not intention) and of group norms compared with all other predictors, it was reasonable to assume that communication about getting together to drink and discussing what happened after drinking may increase perceived social rewards for drinking and social punishment for not drinking. In addition, communication may increase the level of perceived benefits of drinking, but decrease the level of perceived costs of drinking. To address these issues, post hoc analyses were conducted. In particular, four direct paths were added in the SEM model to test these four relationships respectively. The results of SEM estimations revealed that communication was positively associated with perceived benefits ($B = 0.27$, $p < 0.0001$), but not significantly related to perceived cost, social rewards and social punishment.

Other alternative models were also conducted in SEM and summarized below:

(1) A model that removed the path of perceived cost because it was not a significant predictor of drinking intention and behavior produced a similar overall model fit and paths ($\chi 2 = 625.15$ $df = 295$ $\chi 2$ ratio $= 2.13$, CFI = 0.96, TLI = 0.94, RMSEA = 0.05 and SRMA = 0.06). The perceived punishment, however, becomes a significant mediator between norms and drinking intention ($B = 0.31$, $p < 0.05$).

(2) A model that added the path from drinking behavior (i.e., past behavior) to drinking intention (i.e., future intention) also produced a similar model fit and paths ($\chi 2 =$

736.02 *df* =371 χ2 ratio =1.98, CFI = 0.95, TLI = 0.94, RMSEA = 0.05 and SRMA = 0.06). Results of the SEM model reported that past drinking behavior is a strong predictor of future drinking intention ($B = 0.68$, $p < 0.0001$). Communication level, however, became a nonsignificant mediator of norms and drinking intention.

(3) As discussed earlier, adding the direct paths from group norms to drinking intention and to drinking behavior produced a similar model fit to the hypothesized model and paths (χ2 = 711.51 *df* =351 χ2 ratio = 2.03, CFI = 0.95, TLI = 0.94, RMSEA = 0.05 and SRMA = 0.06). However, norms had no direct effects on drinking intention and behavior after controlling for the four mediators.

Results of Open-ended Questions

There are three open-ended questions regarding reasons for drinking with friends, not drinking alcohol and drinking alone. Before analyzing the results of text passages, this study used a proper coding procedure that requires assigning unique labels (Bernard, 1994). Specifically, a list of codes were developed and assigned that corresponded to each separate reason regarding alcohol use held by respondents. Each response to the question has a distinctive code. The code frames were meaningful, exhaustive and mutually exclusive categories (de Vaus, 2002; Gorden, 1992). The creation of the code list was mainly based on what respondents wrote on the survey. In addition, previous alcohol research about drinking motives (e.g., Cooper 1994) was adapted to categorize these passages.

Six other additional coding guidelines were followed: 1) specify the objective of using code frame, 2) maintain a balance between too much and insufficient detail, 3) maximize the maintenance of information, 4) create a sufficient range of codes and variables so that the coder does not need to force data into categories, 5) allow for coding of missing data and 6) group together related categories (Bourque & Clark, 1992). Coding was ensured to be consistent and a naive coder was also used to ensure that different coders could replicate other's coding using the same instructions. The value of Kappa, 0.92, indicating the inter-rater reliability reported a high agreement in coding by two coders across all text passages in this study.

For regression analysis, a series of dichotomous variables were created to code multiple answers offered by one respondent. That is, treating each possible category as a variable with just two responses with one means "mentioned by respondent" and zero means, "not mentioned by respondent" (de Vaus, 2002). Finally, a variable about the number of reasons was created for controlling one participant's responses contained multiple reasons.

Reasons for Drinking with Friends

For the question regarding the reasons for drinking alcohol with friends at a party, five categories were used, including enhancement motive, social motive, psychological motive, conformity motive and personal motive. As shown in Table 14, students identified high response rates relating to enhancement (N =139) and social motives (N = 134), followed by psychological (N =129), personal (N = 59) and conformity (N = 56), respectively. Results of regression analysis indicated that five motives were significantly associated with drinking intention and behavior without the control variable. Only enhancement motive, however, was positively related to drinking intention (B = .48, p < .05) and behavior (B = .36, p <. 05) after controlling the variable of number of reasons reported in this question. Enhancement motive was also positively related to the agreement that it is all right drinking five or more alcoholic beverages on the same occasion (B = .55, p < .01). Although psychological motive was not significantly associated with both drinking intention and behavior, it was positively related to the agreement that it is all right for students to drink five or more *(*B = .86, p < .001) and the acceptance of under 21 drinking behavior (B = .82, p < .001). There is a great range of variation within each motive that provided reasons why students drink alcohol with friends. Examples of each motive are discussed below.

Table 14 Reasons of Drinking Alcohol with Friends

Enhancement Motive		
Code	Response	Frequency
10	Fun	123
11	Have a good time	6
12	Like the pleasant feeling	2
13	Enjoyment	8
Subtotal		139

Physiological Motive		
Code	Response	Frequency
20	Relax	46
21	Cheer up/lighten mood	4
22	Loss of inhibition/ Loosen up	37
23	Increase confidence	8
24	Stress Relief	14
25	Get Drunk/Intoxication	5
26	Feel comfortable	7
27	Buzz feeling	5
Subtotal		126

Social Facilitation Motive		
Code	Response	Frequency
30	Drinking game	5
31	Social lubrication	7
32	Meet people/break ice	8
33	Spend time with friends	41
34	Make one sociable	53
35	Add entertainment to party	20
Subtotal		134

Conformity Motive		
Code	Response	Frequency
40	Peer Pressure	5
41	Fit in/to be popular	3
42	Culture and norms	11
43	Drinking environment	18
44	Everyone is doing it	19
Subtotal		56

Personal Motive		
Code	Response	Frequency
50	Choose to drink	19
51	Like the taste	29
52	Legal age	5
53	Normally meet at bars	6
Subtotal		59

Missing Value: 53 subjects

Enhancement Motive

The Enhancement motive was defined when alcohol is used to enhance one's internal emotional state, such as, having fun and a good time, liking the pleasant feeling after drinking, and enhancing enjoyment (Cooper 1994). For some students, alcohol was used to promote personal feelings. Among all the subcategories across five motives in this study (see Table 14), the response of "fun" appeared the highest rate. Liking the pleasant feeling and enjoyment after drinking were also reported by many students:

"It's fun. I just like it."
"It makes everything more fun."
"I enjoyed it. It adds to enjoyment. Because it's enjoyable."
"Enhanced amusement, elated sense of well-being, social participation."
"I enjoyed doing something different that I don't do often."

Social Facilitation Motive

Social facilitation motive was the belief that alcohol use will enhance entertainment in social situations and make people more sociable. The most common reason among social facilitation motive was that students perceive alcohol as making them more sociable and outgoing.

"It makes the situation more fun; I feel better dancing, socializing, etc."
"I am more relaxed and more talkative than normal."
"It's more fun to do in a social setting and everyone is more talkative and cheerful."
"For social purpose, to be social and less awkward."

Meeting new people and break ice were other social reasons that students used alcohol at a party.

"Meet more people and social lubrication."

"Because it makes it easier to get to know people you don't know. Lightens the mood."

"I like to drink and it makes conversations more interesting and breaks the ice if hanging out with old friends."

An overall sense that drinking alcohol was the opportunity for students to spend time with friends as in:

"I enjoy social drinking with friends at a party"

"It is fun to have somewhat lowered ambitions around people that I can trust as long as my actions are within the law."

"Me and my friends enjoy a good beer and cigar every now and then."

"I'm usually with friends I trust and while we certainly don't need it to have fun, it is fun to relax with drinks together."

Respondents identified some overlapping responses across the social facilitation and enhancement categories suggesting that there was a fluidity of interaction between enhancement and social motivation. For example, some students stated:

"Alcohol is a social drug, after all. So, it's fun. It loosens the social situation."

"It makes socializing more fun and exciting because you are more care free."

Conformity Motive

Another motive of drinking relating to social facilitation is the conformity motive. Conformity motive refers to the beliefs that individuals drink alcohol because of peer pressure, desire of fitting in a group or the influence of college culture or norms. The subcategories of conformity motive showed how students put great emphasis on group inclusion:

"It's a part of college. Embrace the time you have to get shitty."

"Drinking socially is difficult to avoid in a college atmosphere."

"It is just the assumed thing to do. Most of the people around you are drinking, so it is just the norm. I don't consider it peer pressure."

"I don't like to drink but if a drink is bought for me I feel as if it would be rude if I did not drink it."

"It's more fun that way. People hassle you if you don't have a drink in your hand either."

"If other people are drinking I feel it is ok to drink as well."

Drinking environment such as the availability of alcohol in a party makes students feel like it's natural to get a drink.

"It will usually be at a social gathering with friends who supply kegs of beer."

"It's available at most college social settings."

"I often receive free beer so I don't mind drinking it if I don't have to pay for it."

Physiological Motive

Responses coded as "physiological motive" concern physical and psychological effects of alcohol such as tension reduction, coping, and boosts in confidence. Within this group, there were eight subcategories including relax, cheer up, loss of inhibition, increase confidence, stress relief, intoxication, feel comfortable and buzz feeling (see Table 14). The code of "relax," received the highest response in physiological motive, followed by the code of "loss of inhibition**"** In addition, many responses associate it with being drunk or the enjoyment of a "buzz". Students described their experiences:

"Loosen up, liquid courage, relax."

"I am 21. I enjoy a slight buzz. I enjoy doing something different that I don't do often."

"I like the loss of inhibitions. Alcohol is readily available. It's easy to relax with friends and drink."

"Parties are the only opportunities I have to drink, and enjoy the chill nature and greater confidence I get by the loss of inhibitions while drinking."

"Alcohol makes me feel uninhibited, which makes the situation not as awkward and easier to socialize."

Personal Motive

Personal motive was the last category listed in the reasons for drinking alcohol. There were four subcategories in this group including "choose to drink," "like the taste," "legal age," and "normally meet at bar." The coding of "taste of alcohol" was rated the highest response, followed by "choose to drink" in the personal factor of drinking alcohol. Some students reported:

> "Mixed drinks are tasty."
>
> "I enjoy the taste of alcohol"
>
> "I like most beverages. Therefore, a party situation is perfect."
>
> "Sometimes peer pressure. Sometimes to try a new drink. Sometimes simply because I feel like having a drink or two."
>
> "Because I am 21 and like the taste of some drinks."

Reasons of Drinking Alone

Since the majority of students (93.7%) reported that they did not drink alcohol alone, there were only 27 students responding to this open-ended question. Within this category, three subcategories were included: personal preference, taste of alcohol, and relaxing. Personal preference appeared the most common response, followed by the reason of relaxing.

> "I don't like talking to drunk people. By drinking alone I can enjoy the effects of alcohol without having to put up with drama or idiots. It is also much quieter."
>
> "Taking shots is easiest?"
>
> "I'm bored. It's nice outside and I want to enjoy a beer with it. No one is at my apartment."
>
> "I like the taste of it and it is nice to relax and have a drink after a hard day of classes."
>
> "It is relaxing. It is enjoyable. It complements my meal."

Reasons for Not Drinking Alcohol

Besides understanding students' motives of consuming alcohol, it is also important to investigate the reasons that some students do not think drinking alcohol is a good thing. As

displayed in Table 15, five categories were included regarding the reasons of not drinking alcohol: personal preference, self-control, underage, health and religion. Personal preference had the highest response, followed by the categories of self-control and under age, respectively. Below are some of the examples reported in the five categories:

> "Was not in a situation where alcohol was present for consumption legally."
>
> "I don't drink. My friends do and I don't have a problem with that, but I choose not to. A family member of mine is an alcoholic and I have gone through a lot of things because of that."
>
> "I would rather save some embarrassment and remember what I had done than next day and take care of friends."
>
> "I do not drink, I believe getting drunk is wrong. So therefore it is wise to not drink."
>
> "I drank too much last semester and over Christmas break, came to the conclusion that it is not the right thing for me according to where I want to go with my life."

Table 15: Reason of Not Drinking Alcohol

Code	Response	Frequency
Category 1: Personal Preference		
50	No desire	8
51	Don't normally drink	18
52	Choose not to drink	29
53	Don't go out	9
54	Don't' like the taste	20
Subtotal		84
Category 2: Under Age		
55	Under 21	22
Category 3: Health Reason		
56	Family alcoholism	4
57	Calories	10
Subtotal		14
Category 4: Self-control		
58	Wrong to drink	4
59	Drinking is stupid	9
60	No time to parties; need to study hard	10
61	Irresponsible act	6
62	Religion	5
Subtotal		34

Missing Value: 53 Subjects

CHAPTER SIX

DISCUSSION AND CONCLUSIONS

This chapter discusses the major results and implications of this research. Specifically, the chapter begins with a brief overview of hypotheses and continues with the empirical findings. This is followed by a discussion of the implications for health campaigns, which is one of the important practical applications of this dissertation. The limitations and future directions are detailed next. The chapter concludes with a summary of the theoretical contributions.

Overview of this Study

Based on Bandura's (1977, 1986) social learning and cognitive theories, Giddens' theory of structuration (1984), Rogers' (1983) diffusion of innovation, and the literature of norm enforcement, this study proposes a theoretical model mediating the process whereby group norms influence drinking intention and behavior through cost-benefit evaluations, communication and social sanctions. Specifically, this dissertation hypothesizes those group norms, which approve drinking alcohol, increase the level of the perceived benefits of drinking, but decrease the level of perceived costs resulting from drinking. Cost-benefit judgments were posited to mediate the norm-behavior and norm-intention relations. In addition, group norms were hypothesized to increase the level of evaluating the effects of sociability and tension reduction of alcohol as positive things, but decrease the level of evaluating the behavioral impairment effect of alcohol as a negative thing. Furthermore, this study recognizes the role of social sanctions in norm enforcement and argues that group norms increase the level of perceived social rewards and punishment associated with drinking. Social rewards and punishments were

hypothesized to mediate the norm-behavior and norm-intention relations. Finally, group norms were predicted to influence communication patterns about drinking among group members. Communication patterns were also considered as important mediators of norms, drinking intention and drinking behavior.

Major Findings

Results of this data found that group norms that approve drinking alcohol were positively associated with the perceived cost and benefit of drinking, communication patterns and social sanctions. In particular, group norms had the strongest influence on social rewards, followed by punishments among all the predictors. This finding suggests that where a group norm is stronger, group members' perceived sanctions become stronger. Group members may behave in a pro-group manner because group welfare or the reactions of others become salient when a group norm is strong. In addition, results of mediation analysis demonstrates that both rewards and punishments had positive direct effects on drinking intention and were significant mediators of norms and drinking intention, but not of actual drinking behavior. These findings indicate that norms and intention relationship will not be well established without the process of social sanctions. As discussed earlier, norms become effective because of the component of social sanctioning. Group norms, thus, do not influence a pro-group behavior intention directly, but by increasing the perceived social sanctions if one does not behave accordingly. In other words, this research argues that the strength of group norms influences social sanctions, which in turn influences pro-group intention, which supports the notion that the role of social sanctions in norm enforcement is essential (e.g., Coleman, 1990; Durkheim, 1952; Ellickson, 1991; Homans, 1961; Parsons, 1952; Scott, 1971; Ullmann-Margalit, 1977; Yamagishi, 1995). Further, social reward was found to be a stronger mediator than punishment on drinking intention. It is possible

that the measure of punishment is not as salient as that of reward to the respondents; therefore, punishment was not significantly related to intention. For example, the statement that "if I did not drink alcohol at a party, someone from my organization would suggest me to drink" may not be perceived as a punishment to some group members. Therefore, a more salient measure of social punishments might be needed for future research. In terms of drinking behavior, both rewards and punishments were not significant predictors. The assumption of sanctions mediating the relationship between norms and behavior was, thus, not supported. Perhaps other important factors besides social sanctions mediate the relationship between norms and drinking behavior.

This study found that communication patterns had direct influences on both drinking behavior and intention. In particular, communication was the strongest predictor of drinking behavior among the five mediators (i.e., cost, benefit, reward, punishment, communication). In addition, communication fully mediated both the norms-behavior and norms-intention relations. These findings suggest that the transmission of normative messages on drinking intention and behavior could depend on the level of communication about drinking among group members. Without the process of communicating with group members about drinking, the influence of group norms on drinking intention and behavior does not exist. This result is supported by the argument of Rogers' (1983) diffusion of innovation in that the diffusion of a new idea is communicated among the system of group members. In addition, the finding that peer communication influences drinking intention and behavior replicates those of some empirical studies (e.g., Dorsey et al., 1999; Real & Rimal, 2007).

Perceived cost and benefit on drinking are other important mediators in this study. Not only were perceived benefits of drinking positively associated with both drinking intention and behavior, but also did mediate the norm-intention and norm-behavior relations. This finding

provides support for the empirical evidence in that perception about the positive benefit of alcohol consumption is the key to influencing drinking behavior and intention (e.g., Rimal & Real, 2005). Perceived costs, however, were not significant predictors of drinking intention and behavior. Similar to perceived punishment, the perceived costs of drinking perhaps were not as salient as perceived benefit to college students. For example, the statement "drinking makes me sociable" may be a clearer description than "drinking makes me feel clumsy." In addition, it may well be the case that judging the immediate positive effects of drinking such as "alcohol makes one sociable" is more relevant to college students than assessing the long term effects of the costs resulting from drinking, such as, "alcohol makes one feel moody". Evidence shows that young adults often have difficulty in conceptualizing long-term health risks. Therefore, the use of short or long-term effects that are associated with the effects of alcohol should be considered in the future research to effectively measure perceived cost-benefit of drinking.

Besides assessing the global effects of alcohol, this study examines the relationship between norms and specific alcohol effects. For example, group norms indicating approval of drinking were found to increase the level of evaluating the effects of sociability and tension reduction of alcohol as positive things, but decreased the level of evaluating behavioral impairment as a negative thing. Evaluating social effect of alcohol as a positive thing increased students' drinking intention and behavior. These findings support several empirical studies in that social reinforcement motives, such as, facilitation of social interaction, lead to alcohol use (Read et al., 2003; Wood et al., 2001) and normative messages may have a greater impact on those students who drink for social reasons (Neighbors, Larimer & Lewis, 2004).

All the mediation effects on drinking intention in this study were found significant except for perceived costs resulting from drinking. Among five mediators, perceived benefits and

communication were the two significant mediators of norms and drinking behavior. The examination of five mediators demonstrates the need to consider the importance of meditation effects that are related to social norms in order to clarify the power of norms on decision-making. Consistent with Louis, Taylor and Douglas's (1995) arguments, cost-benefit judgments, or other norms related factors, such as, social sanctions and communication, should be assessed separately from norms, but also should not be considered as an independent predictor of decision-making. Therefore, the proposed mediated relationships in this study are important in providing a deeper understanding of normative influence.

The results of open-ended questions suggested that enhancement motive predicted drinking intention and behavior among five drinking motives (including enhancement, social facilitation, conformity, psychological and personal motive). The social facilitation motive identified in one open-ended question was not related to drinking intention and behavior, but it might be the case that enhancement and social facilitation motives were overlapping so it was difficult to distinguish them. For example, many students referred to drinking as a fun thing, but the fun feeling could come from the motive of enhancing excitement and or facilitating social interactions if respondents did not specify the reasons clearly. As for reasons of drinking alone, some students indicate that they enjoyed the relaxed feeling and quiet moments when drinking alone. Many students choose not to drink alcohol because of personal preference and strong self-control.

Implications for Health Campaigns

The social norms marketing approach suggests that by correcting misperceptions of drinking behavior and providing students with accurate information, students will become aware of positive peer behaviors and, thus, reduce high-risk alcohol consumption (e.g., Perkins &

Berkowitz, 1986; Perkins & Weschler, 1996). This approach, however, does not simultaneously consider the underlying mechanisms, such as, the process of judgments on drinking behavior. It is important to note that students may not automatically copy others' behaviors and may evaluate the costs and benefits of those behaviors before making a choice. Correcting misperceptions about the prevalence of consumption may not be sufficient to change students' behavior. Health campaigns should also focus on restructuring judgments on the costs of drinking and the benefits of not drinking (Rimal & Real, 2005). Empirical evidence demonstrates that the evaluations of alcohol outcome predict drinking intention and that students' tendency to binge drink increases with their positive expectations about drinking activities (e.g., Rimal & Real, 2005; Turrisi, 1999). Given the fact that the perceived benefits of drinking was an important indicator of drinking intention and behavior in this study, heath campaigns could disseminate an important message – which the majority of students benefit from moderate or responsible drinking. Further, health campaigns that are promoting greater awareness of and attention to, the judgments on drinking may help certain students to enhance effective self-regulation of healthy habits (Chatzisarantis & Hager, 2007).

In regard to alcohol intervention, knowing why college students drink or students' specific judgments on drinking will help identify the targeted audience for alcohol intervention and the type of interventions that should be used (Darkes & Goldman, 1998). Results of this study suggested that the social effect of alcohol was a strong predictor of drinking intention and behavior in comparison with the effects of tension reduction and behavioral impairment effects. Therefore, health educational efforts need to be sensitive about the fact that the influence of group norms is more influential and salient among those college students who are seeking new friends or adapting to a new college environment by using alcohol as a device. If the factor of

social motive was found to lead to college students' drinking intention and behavior, it could provide a practical application to develop a health campaign to increase students' awareness. For example, a health campaign can be targeted on the messages that 1) socializing with a group of heavy drinkers may increase their own drinking levels; or 2) students could use their social networks to look out for each other's drinking level (see Reifman, Watson, & McCourt, 2006). In summary, understanding students' judgments on drinking and the relationship between group norms and drinking behavior are valuable to educational efforts designed to reduce binge drinking.

Social interaction plays an important role in maintaining or creating a culture of excessive drinking (Stewart et al., 2002). Health education efforts should be sensitive about the environmental and social interaction factors such that students' communication patterns with their group members and the groups that they belong to may reinforce the culture of excessive drinking. For example, evidence shows that the social setting of Greek student organizations may enhance the situation of excessive drinking (Larimer, et al., 2004; Sher, Bartholow, & Nanda, 2001). Therefore, understanding the factors of social sanctions and communication patterns associated with drinking among Greek student organizations is important for health campaigners because these groups tend to emphasize the importance of group membership and group members may wish to gain social approval in order to fit into the image of "being popular" or to avoid being teased and criticized by seeking out drinking situations. In other words, the concepts of social reward and punishment should be incorporated into health messages. In addition, health educators should investigate the question of whether targeting on messages of social reward or punishment associated with drinking norms is a better incentive for students to change drinking attitude and behavior.

Health communication researchers should also pay attention to the content and pattern of students' discussions about drinking, and more importantly, correct the misperception that talking about drinking or getting drunk help achieve social and interpersonal goals on campus. Evidence shows that college binge drinking might be reduced if students better understand that binge drinking does little help to socialize or communicate with others and does damage academic performance and other responsibilities. Besides correcting misperceptions on the prevalence of drinking, health campaign messages could be framed such that the benefit of drinking does not necessarily facilitate social relationships nor does enhance better communication with others. In contrast, not participating in binge drinking needs not mean losing the chance to make friends in college. Further, promoting the benefit of non-binge drinking alternatives is another approach to alcohol prevention programs (Turrisi, 1999).

Limitations and Future Directions

This data offers critical information concerning the relationships among correlates of group norms, social sanctions, and communication patterns and drinking decisions; however, this research also has several limitations. First, the current sample was a relatively restricted one. The present study examined college students from a large university in the Southeast US. Future studies need to be conducted on college populations that vary from this sample to examine the generalizability of the findings since drinking norms may vary across campuses. In addition, this study was conducted among those student organizations that were willing to participate; therefore, the representation of this sample was inevitably limited in generalizability. More diverse student organizations are needed for future research.

Second, this study's cross-sectional design precludes inferences about the temporal

nature of the observed associations. Because this study did not manipulate any variables, the implied causal link between norms and behavior or the link between norms and intention was speculative. It is plausible, for example, that drinking behavior and intention influence the construction of group norms. Similarly, it may well be the case that the level of communication on drinking influences the prevalence of group norms. Replication of findings from the present study with longitudinal samples or an experimental study will help facilitate a clearer understanding of the complex processes and factors that contribute to college student's drinking behaviors.

Third, this study was conducted two weeks before and after the spring break; therefore, the measure of drinking intention over the next two weeks and next 30 days covered the period of spring break for some respondents, which might bias the measure of drinking intention. Date of responding to this survey, however, was not significantly associated with drinking intention and behavior. That is, students who responded to the survey prior and after the spring break did not differ in terms of drinking intention and behavior. Yet, future research should pay attention to this issue since some scholars have observed the evidence of norm of heavy drinking over spring break (Smeaton, Josiam & Dietrich, 1998). Fourth, this study's dependent variable, intention to drink alcoholic beverages, was a possible limitation. Based on self-reports, we cannot determine how well drinking intentions relate to actual drinking behavior. Kim and Hunter (1993), however, have suggested intentions are closely associated with actual behaviors.

Fifth, another limitation concerns bias from self-report. For example, common method variances, also called common method bias, is the variance that is attributable to the measurement method rather than to the construct of interest (Bagozzi & Yi, 1991). Common method variance can inflate or deflate correlations between constructs and generate doubts about

research findings (Campbell & Fiske, 1959). The potential problem of common method variance in this study may arise from negatively worded (reverse-coded) items and respondents' social desirability (Podskoff, et al., 2003). That is, common method variance could exist between the constructs of perceived cost and perceived benefit of drinking because they came from the same source of scale and indicators for the perceived cost, which were reverse coded. Schmitt and Stults (1986) suggest that the effect of negatively worded items may occur when the respondents have established a pattern of responding to the survey and failed to attend to the positive and negative items. Regardless, perceived costs and benefits had a low significant correlation in this study, which suggested that respondents distinguished the difference between these two constructs. Steps to reduce common method bias include assurance of confidentiality, emphasis of there are no right or wrong answers, avoidance of item ambiguity and counterbalance of question order. Conducting a different research design such as an experiment or using certain statistical remedies can also improve common method bias (see more discussion in Podaskoff, et al., 2003).

Sixth, more research needs to be conducted for measuring the perceptions of non-drinking alternative activities in order to effectively evaluate cost-benefit judgments on drinking as students may have held different drinking intention or behavior if they have alternative options (Turrisi, 1999). Finally, this study focuses on ingroup behavior without examining different reactions and behaviors from outgroups. Future work needs to be conducted to examine the intergroup context by investigating how an outgroup's conflicting behaviors or reactions toward the ingroup influence ingroup members' decision-making (Louis, Taylor & Neil, 2004).

Theoretical Contributions

Despite these limitations, this research adds significant contributions to norms and alcohol consumption research. One of the contributions of this research is to examine the process of normative influence and its relation with intention and behavior instead of simply identifying college students' drinking level. Rather than studying norms and drinking behavior at the individual level that are found in many alcohol studies, this dissertation proposes a broader analysis of normative influence at the group-level. That is, this research provides a deeper explanation in the process of drinking behavior within student organizations. The assessment of group-level conditions such as injunctive norms, descriptive norms and social sanctions among group members becomes important in understanding the concept of social norms because social norms cannot exist only within individuals. Understanding norms at the group level may lead to a more adequate analysis of college students' drinking behavior because group norms occur through interaction with others and students mainly consume alcohol for social reasons.

While the evidence of normative influence has been broadly identified, more theoretical explanations for the empirical social norms approach in relation to behavioral change is necessary (Keeling, 1999). Although previous studies have demonstrated a significant relationship between norms and behavioral intention, the mediating effects of group norms on both behavior and intention through judgments, communication and social sanctions have not been examined closely. That is, the previous research has not simultaneously analyzed the process of normative influence related to judgments relevant to drinking tendencies or how social interaction such as communication patterns and social sanctions affect the norms-behavior relation. Therefore, the present study makes a unique contribution to the norms literature by demonstrating the direct and indirect influence of group norms on both intention and behavior.

The examination of relationships among cost-benefit evaluations, norms, intention and behavior in this study suggests that group norms reflect an enhanced awareness of behavior and environmental events. Group norms influence members' behaviors not directly but by eliciting perceptions of behavioral consequences such as cost-benefit evaluations. Cost-benefit evaluations are considered important mediators such that group norms cannot influence intention or behavior without the process of internal judgments. The implications of these findings are that cost-benefit evaluations of a specific behavior may strengthen the norm-intention relation or norm-behavior relation by increasing the perception of and preference of a behavior. In this process, heightened awareness of individuals' present experiences and judgments can facilitate an effective translation of norms into intention or behavior. By emphasizing the mediating role of normative influence on behavior via cost-benefit perceptions, instead of considering its independent impact, this study hopes to clarify the power of social influence on shaping behavioral intention in the alcohol literature. That is, group norms could influence students' alcohol consumption because group norms help students reinforce the means to acquire the benefits of heavy drinking while avoiding the costs or consequences associated with drinking problems. The finding that perceived benefit plays a significant mediated role of drinking behavior and intention in this study is consistent with one of the central principles of social cognitive theory (Bandura, 1986) as applied to alcohol use. In other words, socio-environmental factors such as group norms influence alcohol related judgments that, in turn, influence alcohol use and drinking intention.

Another contribution of the present study is its specification of conditions that normative messages are shared among group members through the mechanism of communication patterns. Communication patterns may play a part in understanding the process that translates normative

influence into choices because communication patterns specify the conditions under which group norms become effective and enhance the flow of normative messages. The mediating role of communication patterns serves as the modifier of norms-behavior relation in a system thus may affect the direction and/or strength of this relationship. Without the process of communication, normative messages cannot be transmitted or shared effectively among group members. Therefore, this study makes an important contribution by assessing the factor of communication in order to investigate the influence of social interaction and its relation to group norms.

From a social norm perspective, there are strong social expectations or social pressure in place to adhere to the norms and values that have developed over time among groups. Unlike other alcohol research focusing on the impact of injunctive (i.e., approval/disapproval of certain behavior) or descriptive norms (i.e., perception of actual behavior), this study additionally investigates the concept of social sanctions (i.e., reward and punishment) along with group expectations (approval/disapproval of behavior) to determine the normative influence on health behaviors. That is, this study seeks to clarify the influence of group norms by explicitly examining the concept of norms and its association with social sanctions. Although alcohol researchers have gradually recognized the role of sanctions in drinking behavior, to my knowledge, the relationship between norms and sanctions has not been investigated explicitly. That is, the relationship between norms and sanctions is often conflated in empirical studies. Some researchers assume that norms automatically reflect the component of sanctions and need not be measured differently from sanctions. Furthermore, the relationships among norms, sanctions and drinking behavior are often not clearly addressed. This research recognizes the role of social sanctions in norm enforcement and investigates both the components of rewards and punishments generating from group norms in the decision-making model in order to suggest a

solution to the key issue of norms, social sanctions and behavior. Perceived social sanctions are essential in understanding norm enforcement in that social sanctions reflect an enhanced awareness of behavior and environmental events. Norms influence our behaviors not directly but by eliciting perceptions of behavioral consequences such as social sanctioning from others (Horne, 2001a). Continuing the investigation of group norms in relation to social sanctions or group expectations will help researchers and educators better understand students' willingness and motivations to take risks or make unhealthy decisions.

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APPENDIX A

DEMOGRAPHIC INFORMATION

Table A Characteristics of Student Organization and Group Member (N= 457)

Characteristics	Frequency (%) (with missing value)	Valid Percent (without missing value)
Date of Responding Survey		
Before spring break	298 (65.2%)	65.2%
After spring break	159 (34.8%)	34.8%
Gender		
Male	88 (19.3%)	24.4%
Female	273 (59.7%)	75.6%
Missing	96 (21%)	
Age		
18-21	320 (89.1%)	89.1%
22-24	52 (8.5%)	10.9%
Missing	99 (21.7%)	
Belong to Greek Organizations		
Yes	216 (47.3%)	47.3%
No	245 (31.7%)	31.7%
Belong to Athletic Team		
Yes	29 (6.3%)	8%
No	352 (72.6%)	92%
Missing	96 (21%)	
International Students		
Yes	29 (6.3%)	99.7%
No	369 (72.6%)	0.3%
Missing	96 (21%)	
Ethnicity Background		
African American	20 (4.4%)	5.6%
Asian/Asian American	5 (1.1%)	1.4%
Caucasian	316 (69.1%)	88%
Hispanic	12 (2.6%)	3.3%
Pacific Islander	1 (0.2%)	0.3%
Native American	5 (1.1%)	1.4%
Missing	98 (21.4%)	
Class Standing		
Freshmen	102 (22.3%)	28.4%
Sophomore	100 (21.9%)	27.9%
Junior	94 (20.6%)	26.2%
Senior	63 (13.8%)	17.5%
Missing	98 (21.4%)	
Drank in Past 30 Days		
Yes	358 (78.3%)	78.3%
No	99 (21.7%)	21.7%
Missing	0	
Drink Alcohol When Partying		
Yes	354 (77.5%)	78.3%
No	98 (21.4%)	21.7%
Missing	5 (1.1%)	
Drink Alcohol Alone		
Yes	24 (5.3%)	5.3%
No	425 (93.0%)	94.7%
Missing	8 (1.8%)	

Characteristics	Frequency (%) (with missing value)	Valid Percent (without missing value)
It's alright for students who are under 21 to drink alcohol		
Strongly Disagree	12 (2.6%)	2.6%
Disagree	5 (1.1%)	1.1%
Slightly Disagree	9 (2.0%)	2.0%
Neutral	25 (5.5%)	5.5%
Slightly Agree	49 (10.7%)	10.7%
Agree	207 (45.3%)	45.3%
Strongly Agree	150 (32.8%)	32.8%
Missing	0	
Intention of Drink Alcohol in Next 30 days		
Strongly Disagree	69 (15.1%)	15.1%
Disagree	16 (3.5%)	3.5%
Slightly Disagree	10 (2.2%)	2.2%
Neutral	8 (1.8%)	1.8%
Slightly Agree	42 (9.2%)	9.2%
Agree	64 (14%)	14%
Strongly Agree	247 (54%)	54.2%
Missing	1 (0.2%)	
Likelihood of Being Legally Intoxicated over the Next 30 Days		
Strongly Disagree	124 (27.1%)	27.2%
Disagree	24 (5.3%)	5.3%
Slightly Disagree	26 (5.7%)	5.7%
Neutral	19 (4.2%)	4.2%
Slightly Agree	75 (16.4%)	16.4%
Agree	56 (12.3%)	12.3%
Strongly Agree	132 (28.9%)	28.9%
Missing	1 (0.2%)	
Number of Drinks Consumed in Past Week		
0	76 (16.6%)	21.2%
1-3	100 (24.1%)	30.7%
4-6	60 (13.1%)	16.8%
7-9	46 (10.1%)	12.8%
10-12	27 (5.9%)	7.5%
13-15	15 (3.3%)	4.2%
more than 15	24 (5.3%)	6.7%
Missing	99 (21.7%)	
Number of Time Felt Sick in Past 30 days		
0	198 (43.3%)	55.3%
1	105 (23%)	29.3%
2	41 (9%)	11.5%
3	5 (1.1%)	1.4%
4	5 (1.1%)	1.4%
5	3 (.7%)	0.8%
6	1 (.2%)	0.3%
Missing	99 (21.7%)	

Characteristics	Frequency (%) (with missing value)	Valid Percent (without missing value)
Perceived Number of Day Per Week Members Drank		
0	30 (6.6%)	7.8%
1	87 (19%)	22.5%
2	151 (33%)	39.1%
3	85 (18.6%)	22%
4	18 (3.9%)	4.7%
5	5 (1.1%)	1.3%
6	5 (1.1%)	1.3%
7	5 (1.1%)	1.3%
Missing	71 (15.5%)	
Perceived Number of Drinks Members Drank in One Occasion		
0	17 (3.7%)	4.4%
1-2	87 (19%)	22.4%
3-4	173 (37.6%)	44.3%
5-6	70 (15.3%)	18%
7-8	26 (5.7%)	6.7%
9-10	12 (2.6%)	3.1%
more than 10	4 (0.9%)	1.0%
Missing	69 (15.1%)	
Frequency of Formal Group Meeting		
More than Twice a week	17 (3.7%)	4.6%
Twice a week	35 (7.7%)	9.5%
Once a week	231 (50.5%)	62.6%
Twice a month	40 (8.8%)	10.8%
Once a month	17 (3.7%)	4.6%
Less than once a month	19 (4.2%)	5.1%
Never meet	10 (2.2%)	2.7%
Missing	88 (19.3%)	
Frequency of Social Events		
More than Twice a week	84 (18.4%)	22.8%
Twice a week	56 (12.3%)	15.2%
Once a week	75 (16.4%)	20.3%
Twice a month	65 (14.2%)	17.6%
Once a month	34 (7.4%)	9.2%
Less than once a month	30 (6.6%)	8.1%
Never meet	25 (5.5%)	6.8%
Missing	88 (19.3%)	

APPENDIX B

SURVEY INSTRUMENT

Page #1

1. Please tell us if you agree or disagree with each of the following statements.

	Strongly disagree	Disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Agree	Strongly agree
It is alright for students to drink alcoholic beverages occasionally.	☐	☐	☐	☐	☐	☐	☐
It is alright for students who are under 21 to drink alcoholic beverages.	☐	☐	☐	☐	☐	☐	☐
It is alright for students to drink 5 or more alcoholic beverages on the same occasion. By 'occasion," we mean at the same time or within a couple of hours of each other.	☐	☐	☐	☐	☐	☐	☐

Page #2

1. Please use your best estimate to answer the following questions.

	Highly unlikely	Unlikely	Somewhat unlikely	Neither likely nor unlikely	Somewhat likely	Likely	Highly like
How likely is it that you will have alcoholic beverages over the next two weeks?	☐	☐	☐	☐	☐	☐	☐
How likely is it that you will have alcoholic beverages over the next 30 days?	☐	☐	☐	☐	☐	☐	☐
How likely is it that you will be in a situation that you end up legally intoxicated over the next two weeks?	☐	☐	☐	☐	☐	☐	☐
How likely is it that you will be in a situation that you end up legally intoxicated over the next 30 days?	☐	☐	☐	☐	☐	☐	☐

Page #3

The following questions are about drinks of alcoholic beverages. One drink equals:
4oz. Wine
10oz. wine cooler
12oz. beer (8oz. Of Canadian, Malt Liquor, or Ice Beers, or 10oz. of Microbrew)
1 Cocktail with 1 oz. of 100 proof liquor or 1 ¼ oz. of 80 proof liquor

1. During the past 30 days (including today), have you ever, even once, had a drink of any alcoholic beverages? Please do not include times when you only had a sip or two from a drink.

- ☐ Yes
- ☐ No

2. If you answered NO to question 1 above, please indicate the reasons that you DID NOT drink during the past 30 days.

Page #4

1. During the past 30 days, how many times did you have five or more drinks at one sitting?

- ☐ 0
- ☐ 1-2
- ☐ 3-4
- ☐ 5-6
- ☐ 7-8
- ☐ 9-10
- ☐ More than 10

2. During the past 30 days, how many times have you ever felt sick to your stomach after drinking alcoholic beverages? (*Drop-down menu ranged from 0 to more than 10 times*)

Page #4 (continue)

3. During the past week, how many alcoholic beverages did you consume?

- ☐ 0
- ☐ 1-3
- ☐ 4-6
- ☐ 7-9
- ☐ 10-12
- ☐ 13-15
- ☐ more than 15

Page #5

1. On average, how many alcoholic beverages do you drink on weekends?

- ☐ 0
- ☐ 1-3
- ☐ 4-6
- ☐ 7-9
- ☐ 10-12
- ☐ 13-15
- ☐ more than 15

2. On average, how many alcoholic beverages do you drink during the weekdays?

- ☐ 0
- ☐ 1-3
- ☐ 4-6
- ☐ 7-9
- ☐ 10-12
- ☐ 13-15
- ☐ more than 15

Page #6

1. Do you drink alcoholic beverages when partying or socializing with friends?

- ☐ Yes
- ☐ No

2. If you answered YES to question 1 above, please indicate the reasons of drinking alcoholic when partying or socializing with friends.

---

3. Do you normally drink alcoholic beverages alone?

- ☐ Yes
- ☐ No

4. If you normally drink alcoholic beverages alone, please indicate the reasons that you decide to drink alcoholic beverages alone.

Page #7

1. Below is a list of particular effects of alcohol that some people feel. We want to know if you think a particular effect of alcohol is good or bad, regardless of whether or not you expect it to happen to you.

If I were under the influence of alcohol:

	This effect is bad	This effect is slightly bad	This effect is slightly good	This effect is good
I would act sociable	☐	☐	☐	☐
I would take risks	☐	☐	☐	☐
I would be a better lover	☐	☐	☐	☐
It would be easier to talk to people	☐	☐	☐	☐
I would feel moody	☐	☐	☐	☐
I would feel calm	☐	☐	☐	☐
I would feel guilty	☐	☐	☐	☐
I would act aggressively	☐	☐	☐	☐
I would be courageous	☐	☐	☐	☐
I would be brave & daring	☐	☐	☐	☐
I would feel peaceful	☐	☐	☐	☐
I would be loud or noisy	☐	☐	☐	☐
I would be clumsy	☐	☐	☐	☐
I would feel dizzy	☐	☐	☐	☐
I would enjoy sex more	☐	☐	☐	☐

Page #8

1. Please type in the name of a student club/organization of which you are currently a member. If you have joined more than one organization, please select one that is most important to you in answering the following questions. Note: Any identifiers will NOT be reported or disclosed under any circumstances. No organization will be singled out for its members' reported behaviors.

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2. Please select the statement that best represents your feelings. Please refer to the club/organization you have specified above.

	Strongly disagree	Disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Agree	Strongly agree
I feel that I belong to this group.	☐	☐	☐	☐	☐	☐	☐
I am happy to be part of this group.	☐	☐	☐	☐	☐	☐	☐
I see myself as part of this group.	☐	☐	☐	☐	☐	☐	☐
This group is one of the best anywhere.	☐	☐	☐	☐	☐	☐	☐
I feel that I am a member of this group.	☐	☐	☐	☐	☐	☐	☐
I am content to be part of this group.	☐	☐	☐	☐	☐	☐	☐

Page #9

1. Please select the statement that best represents your feelings. Please refer to the club/organization you have specified above.

	Strongly disagree	Disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Agree	Strongly agree
There is a feeling of unity and togetherness among my group members.	☐	☐	☐	☐	☐	☐	☐
Problem solving in this group is truly a group effort.	☐	☐	☐	☐	☐	☐	☐
My group members influence one another.	☐	☐	☐	☐	☐	☐	☐
Most group members contribute to decision making in this group.	☐	☐	☐	☐	☐	☐	☐
My group members would not like to postpone group meetings.	☐	☐	☐	☐	☐	☐	☐
Despite group tensions, my group members tend to stick together.	☐	☐	☐	☐	☐	☐	☐
My group members frequently must coordinate their efforts with each other.	☐	☐	☐	☐	☐	☐	☐
People are concerned when a group member is absent.	☐	☐	☐	☐	☐	☐	☐

Page #10

1. Please tell us if you agree or disagree with each of the following statements.

	Strongly disagree	Disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Agree	Strongly agree
If I drank alcohol at a party, members of my organization would generally think I am being sociable.	☐	☐	☐	☐	☐	☐	☐
If I drank alcohol at a party, the majority of members in my club/organization would have more conversations with me at a party.	☐	☐	☐	☐	☐	☐	☐
If I drank alcohol at a party, members of my organization would generally think I fit in with the group.	☐	☐	☐	☐	☐	☐	☐
If I drank alcohol at party members of my organization would generally think I am cool.	☐	☐	☐	☐	☐	☐	☐
If I drank alcohol at a party, members of my organization would generally think I have made the party more fun.	☐	☐	☐	☐	☐	☐	☐

Page #11

1. Please tell us if you agree or disagree with each of the following statements.

	Strongly disagree	Disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Agree	Strongly Agree
If I DID NOT drink alcohol at a party, someone from my organization would suggest that I have a drink.	☐	☐	☐	☐	☐	☐	☐
If I DID NOT drink alcohol at a party, someone from my organization would hand me an alcoholic drink.	☐	☐	☐	☐	☐	☐	☐
If I DID NOT drink alcohol at a party, someone from my organization would pressure me to drink.	☐	☐	☐	☐	☐	☐	☐
If I DID NOT drink alcohol at a party, someone from my organization would ask me what was wrong.	☐	☐	☐	☐	☐	☐	☐
If I DID NOT drink alcohol at a party, someone from my organization would tease me about not drinking.	☐	☐	☐	☐	☐	☐	☐

Page #12

Please answer the following questions by referring to the club/organization you have specified earlier as most important.

1. Do the majority of members in your club/organization drink alcoholic beverages?

- ☐ Yes
- ☐ No

2. How many days per week do you think the majority of members in your club/organization drink alcoholic beverages? (*Drop- down menu ranged from 0-7 days*)

3. What is the average number of alcoholic beverages you think the majority of members in your club/organization drink at one occasion? By 'occasion," we mean at the same time or within a couple of hours.

- ☐ 0
- ☐ 1-2
- ☐ 3-4
- ☐ 5-6
- ☐ 7-8
- ☐ 9-10
- ☐ more than 10

APPENDIX C

GRAPHS for REGRESSION DIAGNOSTICS

Figure A Leverge-versus-squared-residuals Plot

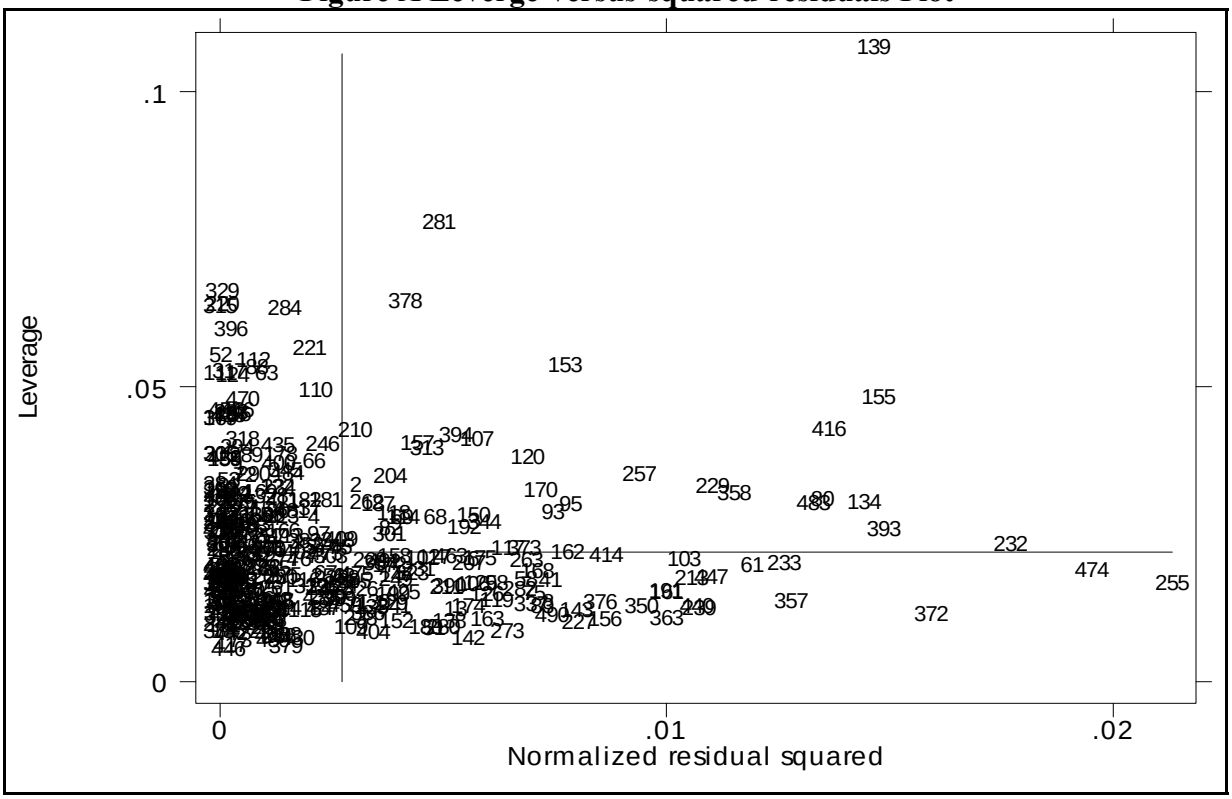


Figure B Diagnostic Case Statistics – DFBETA for Communication, Injunctive and Descriptive Norms

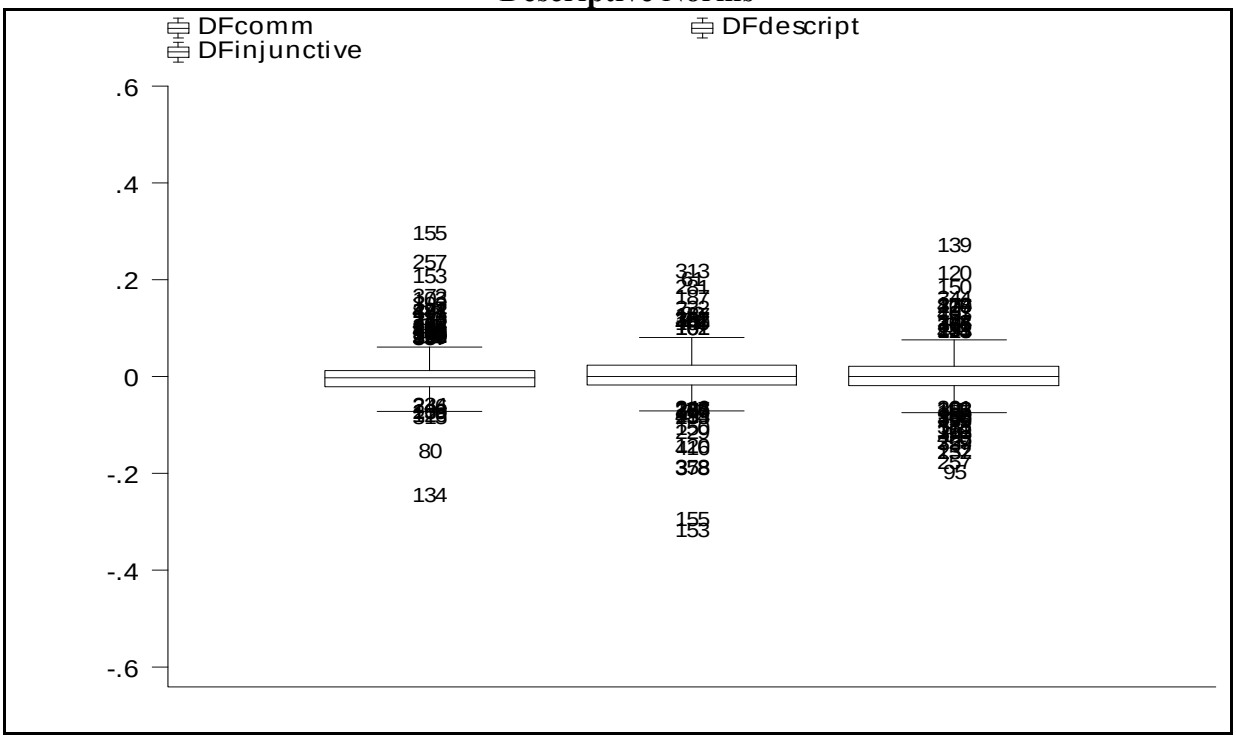
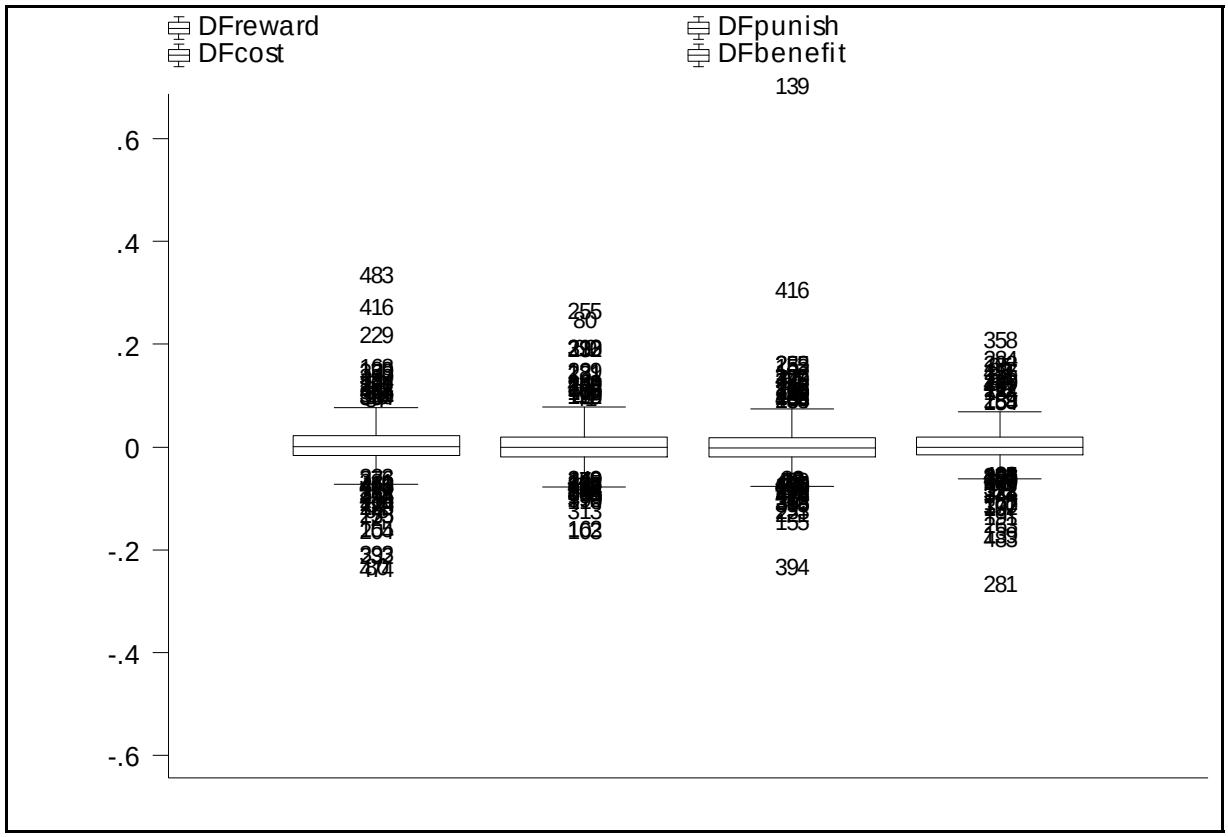


Figure C : Diagnostifc Case Statistics – DFBETA for Reward, Punishment, Cost and Benefit



APPENDIX D

COVER LETTERS & CONSENT FORMS

[Letter Invitation for Washington State University]

DATE

Dear NAME,

We are asking for your assistance with an important project that we are conducting at Washington State University (WSU). Your name has been randomly selected as a member of a student organization at WSU for participation in an online survey. We want to learn more about students' daily experiences so that we have an effective way to improve student health and wellness. Your participation is completely voluntary, but we hope you will choose to complete this survey so that the study's conclusions reflect the full range of student experiences at WSU. This is your opportunity to help us understand the college experience for present and for future students!

You will be receiving an online link within a week with instructions for filling out the questionnaire. The survey has been approved by the Institutional Review Board at WSU (xxx) xxx-xxxx and National Panhellenic Conference Research Committee. All of your answers to the survey will be kept completely confidential, and you don't have to answer any question that makes you feel uncomfortable. If you have any questions or concerns after filling out this questionnaire, feel free to contact Chien-fei Chen at (xxx) xxx-xxxx or chien-fei@wsu.edu.

To show our appreciation, upon completion of the survey you can choose to enter into a drawing for one of 15 cash prizes ranging from $20.00 to $100.00. Understanding students' experiences and opinions in health related issues in a campus community is important. Thank you and best wishes for your continued success in college.

Thank you in advance for taking the few minutes necessary to complete your questionnaire. We truly appreciate you assistance.

Sincerely,

Louis Gray, Professor Emeritus
Chien-fei Chen, Ph.D. candidate
Department of Sociology
Washington State University

[Informed Consent for Washington State University]

Welcome to the College Student Health Survey. You have been selected to take part in this study because you are a member of _____ (FILL IN ORGANIZATION NAME) at Washington State University (WSU). We want to learn about college students' health decision-making so that we can find ways to improve student health. This survey deals with alcohol issues and problems surrounding the use of alcohol.

Your participation is completely voluntary, but we hope you will choose to complete this survey so that the study's conclusions reflect the full range of student experiences at WSU. This is your opportunity to help us understand the college experience for present and for future students!

The research team will treat your answers in confidence. To ensure confidentiality, your name and all personal identifiers will be separated from the survey. The results of this study will always be reported as statistical averages and never in terms of individuals.

This online survey will take you about 20 minutes to complete. Completing the survey serves as (1) an indication of your consent to voluntarily participate in this project and (2) an acknowledgement that you are currently at least 18 years of age. *If you are not 18 years of age or older, please do not complete the survey.*

Some questions ask about personal matters which are private and sensitive. You may choose not to answer any question that makes you uncomfortable. If you would like more information about health issues or where to seek services for dealing with alcohol-related issues, please contact Counseling & Testing Services (xxx- xxx-xxxx) and Alcohol and Drug Counseling, Assessment, Prevention Services (xxx- xxx-xxxx).

Information received through this survey will help us understand the WSU community. To show our appreciation, upon completion of the survey you will be automatically entered into a drawing for one of ten cash prizes ranging from $15 to $200.00. To ensure confidentiality, your name and all identifiers are completely separated from the content of the survey for purposes of the drawing.

Thank you and best wishes for your continued success in college. If you have questions about this study, please contact the researchers, Chien-fei Chen at chien-fei@wsu.edu or by phone (xxx) xxx-xxxx.

[Letter Invitation for University of Tennessee]

Dear President of [NAME OF STUDENT ORGANIZATION],

We are asking for your assistance with an important research project that we are conducting at University of Tennessee (UTK). This project is about college students' experience and attitude toward alcohol and we are asking for your permission to email our survey to your group members. Once we have received your approval this week, we will email you the message with a web link that can be sent to your members immediately.

Our survey has been approved by the Institutional Review Board at UTK and National Panhellenic Conference Research Committee. It is important to note that our intention to study this project is not to identify which student organizations consume more alcohol, but to examine the relationship between norms and drinking attitude. This survey takes about 15 minutes to complete. All the answers to this survey will be collected anonymously and kept completely confidential, and students do not have to answer any
questions that make them uncomfortable.

To show our appreciation, upon completion of the survey students can choose to enter into a drawing for free coffee coupons ranging from 3 to 10 cups and one $10 coffee gift certificate. We will offer about 500 cups of Starbucks coffee and 20 gift certificates. Understanding students' experiences and opinions in health related issues in a campus community is extremely important. Thank you and best wishes for your continued success in college. We truly appreciate your assistance.

Sincerely,

Chien-fei Chen, Ph.D. Candidate
Dr. John Haas, Associate Professor and Director
School of Communication Studies
University of Tennessee, Knoxville

[Informed Consent for University of Tennessee]

Dear Student,

You are invited to participate in an important research project that is being conducted by Deans of Student, Chien-fei Chen, Lecturer, and Dr. John Haas from the School of Communication Studies at the University of Tennessee (UTK). The purpose of this study is to collect information about undergraduates' opinions and experiences regarding alcohol use. The study is not interested in, and will not attempt to identify, which student organizations consume higher levels of alcohol. ****The survey link is at the bottom of this email below.****

Procedure:
You will fill out an online survey, which takes about 15 minutes to complete. Your participation is entirely voluntary. To participate in this study, you must be 18 years of age or older.

Benefits:
You will help present and future students understand college life and experience. You can enter into a drawing for free coffee coupons ranging from 3 to 10 cups and one coffee gift certificate (10 dollars). We will offer about 500 cups of Starbucks coffee and 20 gift certificates.

Discomforts:
Some of the questions ask about personal thoughts and experiences that might be private and sensitive. You may choose not to answer any questions that make you uncomfortable. If you would like more information about alcohol-related issues, please contact UT Student Counseling Center (xxx)- xxxx-xxxx), or Helen Ross McNabb Center (xxx) xxxx-xxxx.

Data Collection:
This online survey will be collected through a secure server. To ensure anonymity, your personal identifiers will not be collected. In addition, we will NOT collect your IP address when you respond to the survey. Your email address for entering the drawing will not be stored with data from your survey. The results of this study will never be reported in terms of individuals or specific club/organization. All responses will be kept confidential, unless otherwise required by law.

Contact Information:
This study has been reviewed and approved for human subject participation at UTK. If you have questions about your rights as a participant, please contact the Office of Research Compliance Officer at (xxx) xxxx-xxxx. For questions about this study, you should contact Chien-fei Chen at cchen26@utk.edu or (xxx) xxxx-xxxx.

Consent Statement: I have read the above information and have sufficient information to make a decision about participating in this study. I am 18 years of age or older and freely consent to participate.

By clicking the following link, I agree to participate in this study and will be taken to the questionnaire. (Note: please do not complete this survey twice, thanks for your help.)

[Reminder for University of Tennessee]

Dear Student,

This is a reminder concerning the UT Student Health Online Survey that was sent to you last week. If you have already completed the survey, thank you very much for your time and contribution to this important study. If you have not yet answered, we would very much appreciate you completing the questionnaire soon.

Purpose:
This research project that is being conducted by Chien-fei Chen, Lecturer, and Dr. John Haas from the School of Communication Studies at the University of Tennessee (UT). The purpose of this study is to collect information about undergraduates' opinions and experiences regarding alcohol use. The study is not interested in, and will not attempt to identify, which student organizations consume higher levels of alcohol.

Procedure:
You will fill out an online survey, which takes about 15 minutes to complete. Your participation is entirely voluntary. To participate in this study, you must be 18 years of age or older. ****The survey link is at the bottom of this email below.****

Benefits:
You will help present and future students understand college life and experience. You can enter into a drawing for free coffee coupons ranging from 3 to 10 cups and one $10 coffee gift certificate. We will offer about 500 cups of Starbucks coffee and 20 gift certificates.

Discomforts:
Some of the questions ask about personal thoughts and experiences that might be private and sensitive. You may choose not to answer any questions that make you uncomfortable. If you would like more information about alcohol-related issues, please contact UT Student Counseling Center (xxx) xxxx-xxxx, or Helen Ross McNabb Center (xxx) xxxx-xxxx.

Data Collection:
This online survey will be collected through a secure server. To ensure anonymity, your personal identifiers will not be collected. In addition, we will NOT collect your IP address when you respond to the survey. Your email address for entering the drawing will not be stored with data from your survey. The results of this study will never be reported in terms of individuals or specific club or organization. All responses will be kept confidential, unless otherwise required by law.

Contact Information:
This study has been reviewed and approved for human subject participation at UT. If you have questions about your rights as a participant, please contact the Office of Research Compliance Officer at (xxx) xxxx-xxxx. For questions about this study, you should contact Chien-fei Chen

at cchen26@utk.edu or (xxx) xxxx-xxxx.

Consent Statement:
I have read the above information and have sufficient information to make a decision about participating in this study. I am 18 years of age or older and freely consent to participate.

By clicking the following link, I agree to participate in this study and will be taken to the questionnaire. (Note: please do not complete this survey twice, thanks for your help.)