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Evaluating the impact of outdoor orientation on incoming students' perceptions of social norms about alcohol use on campus

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EVALUATING THE IMPACT OF OUTDOOR ORIENTATION ON INCOMING STUDENTS' PERCEPTIONS OF SOCIAL NORMS ABOUT ALCOHOL USE ON CAMPUS

BY

BENJAMIN GEORGE OLIVER

Bachelor of Arts, Hamilton College, 2002

THESIS

Submitted to the University of New Hampshire in Partial Fulfillment of the Requirements for the Degree of

Master of Science in Kinesiology

September, 2010
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5-20-10
Date
DEDICATION

This thesis is dedicated to the twenty-five years of Hamilton students, leaders, and staff who have made the Adirondack Adventure program what it is today – keep leaning in! It is also dedicated to my amazing wife Janine, a constant source of inspiration and support throughout this process.
ACKNOWLEDGMENT

There are a great many people who helped make this thesis a reality. Foremost among them is my friend and mentor, Andrew Jillings. For over ten years, he has been a beacon of guidance and support in my life, providing direction, prodding, humor, and advice whenever I have asked. Were it not for his mentorship I would never have started down this path. I also owe a great deal to all the Adirondack Adventure leaders, especially Amanda, Ross, and Callie, who helped me complete this study, I could not have done it without them.

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ABSTRACT

EVALUATING THE IMPACT OF OUTDOOR ORIENTATION ON INCOMING STUDENTS’ PERCEPTIONS OF SOCIAL NORMS ABOUT ALCOHOL USE ON CAMPUS

by

Benjamin George Oliver

University of New Hampshire, September, 2010

Alcohol issues are a concern of colleges and universities (National Institutes of Health, 2008). This study assessed the effects of an outdoor orientation program on the alcohol use and perceptions of program participants. Specifically, 30 outdoor orientation leaders participated in a three-hour training based on the social norms approach (Berkowitz, 2005). A repeated-measures, quasi-experimental design was used to collect data on incoming students’ own use and approval of alcohol, and their perceptions of other students’ use and approval. Results indicated that untrained leaders were “carriers of the misperception” of permissive alcohol use (Perkins, 1997) negatively effecting incoming students perceptions. Trained leaders did not reduce participants misperceptions, however misperceptions in these groups did not increase. These results suggest the need for social norms training for outdoor orientation leaders to minimize their potential for spreading misinformation about alcohol use norms on campus. An outdoor orientation training model is presented.
CHAPTER I

INTRODUCTION

Alcohol use by undergraduate students is a serious concern for college and university administrators, linked with numerous negative consequences such as lower academic performance, more frequent trouble with authority, and difficulties in personal relationships (Perkins & Berkowitz, 1986; Prentice & Miller, 1993). Hingson, Hereen, Winter, & Wechsler (2005) reported the following statistics regarding alcohol use among college and university students:

- 1,700 die each year from alcohol-related injuries (i.e. including motor vehicle crashes)
- 599,000 are injured under the influence of alcohol
- More than 696,000 are assaulted by a student who has been drinking
- More than 97,000 are victims of alcohol-related sexual assault or date rape
- 400,000 have unprotected sex
- More than 100,000 report having been too intoxicated to know if they consented to having sex
- Approximately one quarter of students report academic consequences of drinking including: missing class, falling behind, doing poorly on exams or papers, and receiving lower overall grades
- More than 150,000 develop an alcohol-related health problem
• 2.1 million drive under the influence of alcohol each year

Given the rates of college alcohol use, and the severe consequences associated with misuse, there is increased attention nationwide on alcohol education and prevention programs for college campuses. Numerous prevention models have been tested, such as the information model (Kluger & Gallant, 2000; Tobler, 2000), the social influence skill building model (Shope, Copeland, Kamp, & Lang, 1998), and the affective model (Hansen & Graham, 1991). These models focused on individuals making good choices for themselves, but resulted in minimal success in impacting alcohol use (Ott & Doyle, 2005). A number of studies (Ellickson & Bell, 1990; Kandel, 1980; Marks, Graham, & Hansen, 1992; Perkins, 1985; Stein, Newcomb, & Bentler, 1987) found perceptions of peer alcohol use were among the most consistent predictors of own alcohol use. In addition, Mooney and Corcoran (1991) found perceptions of peer attitudes and perceptions of peer consumption were stronger predictors of alcohol consumption than personal characteristics. This information has led to an increase in programs designed to address the social context where college drinking takes place.

The social norms approach asserts that students’ private attitudes are already in line with the moderate stance and attitudes valued by most colleges and universities. Based on this premise, these interventions seek to reduce pluralistic ignorance about alcohol norms on campus. Pluralistic ignorance is a type of self-other difference characterized by a belief that one’s own private thoughts and feelings are different from those of others, even though outward behavior is identical (Miller & McFarland, 1991). A classic example of pluralistic ignorance frequently occurs in classroom settings. A teacher pauses during a lecture to ask if the class has any questions. Nearly every student
is confused, but before raising their hands each student looks around to gauge the comprehension of the rest of the class. Seeing no other hands raised, each student assumes he or she is the only one who did not understand the lecture. In this situation, each student is experiencing pluralistic ignorance. They have misunderstood the outward behavior of their classmates (not raising their hands), to be driven by different internal conditions than their own (fear of embarrassment vs. true understanding of the material). In the case of alcohol use, students experiencing pluralistic ignorance falsely believe the normative attitude on campus to be more permissive of alcohol use than their own attitude. They hold this belief even though they outwardly display the same levels of alcohol consumption and acceptance of alcohol as other students. These students mistakenly believe “their own behavior is driven by social pressure, but they assume that other people’s identical behavior is an accurate reflection of their true feelings” (Prentice & Miller, 1993, p. 244).

Numerous researchers have taken note of the pluralistic ignorance phenomenon and have hypothesized,

If [students] were exposed to the concept of pluralistic ignorance in a group setting – then they should experience much less social pressure to consume alcohol. As a result, they should drink less and should feel more comfortable with their drinking behavior. (Schroeder & Prentice, 1998, p. 2154)

Several researchers (Ott & Doyle, 2005; Perkins, 2002; Prentice & Miller, 1993; Schroeder & Prentice, 1998) have documented both the widespread prevalence of pluralistic ignorance about alcohol use on college campuses, as well as the successful implementation of social norms interventions to reduce both pluralistic ignorance and actual consumption of alcohol in a variety of settings.
In considering normative influences on behavior, pluralistic ignorance can act on two types of norms – descriptive norms and injunctive norms. Descriptive norms refer to what “is,” quantified as the amount of alcohol consumed (i.e. number of drinks), or the frequency of use (i.e. drinking occasions per week, month, etc.). In these cases, pluralistic ignorance of the norm means individuals perceive other students are consuming more alcohol than they are, or are consuming alcohol more frequently. Early studies of social norms focused on descriptive norms. More recently, researchers have begun to investigate the effects of pluralistic ignorance on injunctive norms, which “refer to the perceived approval of drinking (the norms of ‘ought’) and represent perceived moral rules of the peer group” (Borsari & Carey, 2003, p. 331). Injunctive norms are essentially social approval for a behavior. When an individual is pluralistically ignorant of injunctive norms, they believe others are more approving of alcohol use and/or behaviors associated with alcohol use. While studies have found that virtually all students experience pluralistic ignorance, certain sub-groups seem especially susceptible to these misperceptions.

One group often considered ‘high risk” by social norms researchers is first-year students. Students entering college or university are typically under high pressure to “fit-in” in order to establish a supportive peer group in their new environment. According to Ott and Doyle (2005), the need for acceptance often leads teens to behave in ways consistent with their perceptions of group norms. As stated previously, high levels of comfort with, and use of, alcohol are common and widespread norms on most college and university campuses. Therefore, it is not uncommon for first-year students, who are mostly teenagers, to be heavily influenced by the norms of alcohol use in college, and as
a result increase their alcohol consumption during their first year of college. This increase is especially prevalent among students with little previous experience with alcohol (Schroeder & Prentice, 1998). This phenomenon has been supported by research indicating that individuals who feel they have less autonomy (a common feeling during the first semester of college when affiliation is a prime concern of most new students) may be more receptive to social norms (Bruce & Keller, 2007). Similarly, Borsari and Carey (1999) found misperceptions of the norm (i.e. pluralistic ignorance) were especially likely to lead to heavy drinking in new members of a community (i.e. first-year students and fraternity/sorority pledges) who feel increased pressure to gain acceptance from older members of the community. Not only does this pressure to conform apply to how much an individual drinks, it also applies to how much they approve of drinking and drinking related behaviors.

Early adopters of the social norms approach, including Northern Illinois University in 1989, used a universal prevention approach. This approach typically uses print and/or electronic marketing materials to target an entire campus population without regard for which segments of the population are most at risk (Berkowitz, 2005). An alternative to using campus-wide marketing is to use a selective or targeted intervention. These interventions focus on groups considered at-risk for greater levels of alcohol use (i.e. first-year students, fraternity or sorority members, or athletes).

Schroeder and Prentice (1998) described the use of a targeted intervention with a group of incoming college freshman during traditional on-campus orientation. They compared a group of incoming students who participated in a targeted social norms intervention to a group participating in an individually oriented decision making
workshop. The experimental (social norms) group took part in small group discussions within their resident assistant groups during orientation. Group leaders focused on describing self-other differences and the phenomenon of pluralistic ignorance. Students were also asked to reflect on and discuss how self-other differences develop and why they may lead to increased drinking behavior. The control (individual-oriented) groups took part in a discussion of similar length and format, but with a focus on individual decision-making and the consequences of choosing to drink in various social settings. Schroeder and Prentice found students in the peer-oriented group reported drinking significantly less than students in the individual-oriented group after four to six months. The researchers hypothesized that the reduction in drinking behavior occurred as a result of a reduction of the strength of the prescriptive (i.e. injunctive) drinking norm, brought about by participation in the peer-oriented discussion groups.

While first-year students are at an elevated risk for alcohol use (or misuse), they may also be an ideal population for targeted small group social norms interventions. There are two reasons why this may be the case. First, entering students have not yet developed established habits and behaviors, specifically concerning alcohol use on campus. For this reason it may be “easier to affect the formation of their drinking habits than to change the already-established habits of more advanced students” (Schroeder & Prentice, 1998, p. 2157). In addition, as Schroeder and Prentice point out, to the extent that entering students do have preconceived notions about drinking and socializing in college, they do not yet have any real experience to support their preconceptions.

Orientation programs, like the one studied by Schroeder and Prentice (1998), are widely used by colleges and universities to help smooth students’ transition from high
school to higher education. A subset of orientation programs, called outdoor orientation programs, are a “physically challenging introduction to college, using wilderness camping and adventure activities with incoming students working together in small groups” (2008, p. 21). In 2006, there were 164 of these programs operating at four-year colleges and universities in the US (Bell, Holmes, & Williams, in press). According to Gass (1986, p. 57, 1999, p. 374), successful outdoor orientation programs are those that focus on student development areas relevant to incoming students, specifically Gass lists:

- attachment to and isolation from peers
- faculty-student interaction and/or isolation
- focus on career development and major course of study
- academic interest or boredom
- inadequate preparation for college academics
- dissonance and compatibility with college environment and student expectations

This last area, dissonance and compatibility with the college environment is closely related to pluralistic ignorance. Incoming students may have already developed an idea about what drinking at college is going to be like. Yet, most of this preconception is based on the media and other sources that are no more accurate. In a study of incoming college students, Rimal (2008) found that perceived benefits, defined as the belief that drinking alcohol leads to specific benefits, accounted for a significant amount of the variation in intention to consume alcohol. In addition, Rimal also found that anticipatory socialization, the belief that drinking alcohol is a way to socialize with others, accounted for a significant amount of the variation in intention to consume alcohol. Students are entering college with the belief that drinking is an important part of the college
experience. It is therefore crucial for colleges to educate incoming students about the reality of drinking in the college environment in a way that reduces pluralistic ignorance, and increases students’ sense of compatibility with their environment. Outdoor orientation programs may be one way in which colleges and universities can engage students in open and honest discussions about responsible alcohol use at college. In a sense, these programs could serve as a sort of selective social norms intervention (Berkowitz, 2005), targeting entering students as a group at high risk of pluralistic ignorance and alcohol misuse.

Wardwell (1999) investigated the effects of an outdoor orientation program on the pluralistic ignorance of entering first-year college students. Participants in this outdoor orientation program participated in a five-day wilderness trip with a small group of other entering students, and two to three upper class leaders. The program was not designed to intentionally address issues of pluralistic ignorance or alcohol norms during the trip, however, Wardwell (p. 33) noted:

The Frosh Trip is an environment where students are exposed to the concept of pluralistic ignorance. They may not know what it’s called and the leaders have not been trained at exposing it, but through the natural course of the trip misperceived norms are corrected... If students feel comfortable enough, they will let down their false exterior and voice their true opinions...the illusion of universality surrounding the misperceived norms will be broken, and freshmen will see that they are less different from other freshmen than they originally thought.

At the end of the outdoor orientation program, Wardwell found participants experienced significant reductions in their pluralistic ignorance about “desire to party” compared to students on a waiting list for the program, and students who did not participate in any pre-orientation program. Wardwell used “desire to party” as a proxy for alcohol use, but provided little evidence as to the validity of this measure as a proxy for actual alcohol
consumption. Regardless, it seems that outdoor orientation programs do have the ability to reduce incoming students’ pluralistic ignorance about topics related to alcohol use and partying at college.

The purpose of the current study was to expand upon the research done by Wardwell (1999) by investigating the effects of leader training on an outdoor orientation programs ability to serve as a targeted social norms intervention for reducing students’ pluralistic ignorance about alcohol use on campus. Pluralistic ignorance was measured both in terms of descriptive norms (quantity and frequency) as well as injunctive norms (social approval). In addition, data was collected at the end of students’ first semester of college to examine whether the outdoor orientation program, and specifically the leader training, had an effect on students’ alcohol use as compared to students who did not participate in any pre-orientation program.

**Research Questions**

The specific goal of this study was to investigate the effects of a social norms training program for outdoor orientation program leaders on the normative beliefs of incoming students regarding alcohol, and whether changes in those beliefs led to changes in drinking behavior. To better achieve this goal, seven research questions were examined:

1a. Did participation in an outdoor orientation program (Time 1 – Time 2) affect participants’ pluralistic ignorance about alcohol use and attitudes?

1b. Did the addition of social norms training for the outdoor orientation program leaders have an effect on participants’ pluralistic ignorance?
2a. Did participation in the traditional on-campus orientation program (Time 2 – Time 3) affect students’ pluralistic ignorance about alcohol use and attitudes?

2b. Was there a different effect for students from the OOP or OOP+ groups?

3a. Was there an interaction between participation in outdoor orientation (in the OOP or OOP+ group), and participation in the traditional on-campus orientation (Time 1 – Time 3) that affected students’ pluralistic ignorance about alcohol use and attitudes?

3b. How did this interaction compare to participation in only on-campus orientation?

4. After one semester of college (Time 4), did students who participated in the outdoor orientation program (either in the OOP or OOP+ group) report different alcohol use or attitudes than students who did not participate in any pre-orientation (NPO group)?

**Justification**

As colleges and universities seek to recruit students in an increasingly competitive environment, those schools offering high quality programs will have an edge in recruiting and retaining students. Increasingly, schools are offering outdoor orientation programs as a way to attract students. According to Stremba and Clemetsen (1994), outdoor orientation “programs may be seen as a way to attract students and to distinguish the university from its competitors” (as cited in Davis-Berman & Berman, 1996, p. 27). Bell & Vaillancourt (in review) found outdoor orientation programs that were isolated from the broader campus community were subject to discontinuation. Despite the increasing popularity of these programs, those that cannot justify their existence by demonstrating relevance to the institution’s aims may be subject to budget cuts and closures.
One area where outdoor orientation programs have the ability to demonstrate value is in the transmission and development of positive campus norms. The small group environment, creation of social contracts to establish group norms and expectations (i.e. the full value contract), and intimate setting of these programs make them an ideal venue for conveying information to students about potentially sensitive subjects like drinking, diversity, sexual assault, etc. Furthermore, since upper class students typically lead these trips, incoming students are likely to accept these normative messages as being advice shared by a peer, rather than mandate by the administration.

Gass (1999) suggests placing incoming students in adventurous environments may be an effective way to reduce discrepancies between students’ expectations of college and the reality of campus life. This same principle has been applied to self-other differences as a way to reduce pluralistic ignorance about alcohol use on campus. Wardwell (1999) found participating in an outdoor orientation program led to less pluralistic ignorance about social fit and desire to party.

This study seeks to both contribute to the literature on the effectiveness of outdoor orientation programs and to provide additional justification for the use of outdoor orientation programs by colleges and universities. Furthermore, this study will expand on the existing social norms literature by applying a targeted social norms approach in a novel setting.

**Definition of Terms**

**Full Value Contract** – The Full Value Contract is a type of social contract typically created by groups engaged in adventure activities, including outdoor orientation
programs. According to Schoel, Prouty, and Radcliffe (1989) the full value contract is “a law built on value for each person and for the group as a whole. It is a first line of defense when it comes to the group’s having a safe place to be” (p. 94). There are three core components to a basic full value contract:

- Agreement to work together as a group and to work toward individual and group goals
- Agreement to adhere to certain safety and group behavior guidelines
- Agreement to give and receive feedback, both positive and negative, and to work toward changing behavior when it is appropriate (p. 95)

Outdoor Orientation Program – Bell et al. (in press) defined outdoor orientation as “college orientation programs that work with small groups of first-year students (15 or fewer), use adventure experiences and include at least one overnight in a wilderness setting” (p. 2). Sometimes called wilderness orientation or wilderness pre-orientation programs, colleges and universities offer outdoor orientation programs as an alternative type of orientation, typically in advance of and in addition to traditional orientation. These programs usually share with traditional orientation the goal of easing the transition from high school into college (Davis-Berman & Berman, 1996; Galloway, 2000; Vlamis, 2002).

Pluralistic Ignorance – A type of self-other difference characterized by a belief that one’s own private thoughts and feelings are different from those of others, even though outward behavior is identical (Miller & McFarland, 1991). Originally coined as a term to
describe a situation in which all members of a group privately reject the group norm while also believing that all other members of the group support the norm.

**Social Norms Theory** – Social norms theory is the collective research and evidence supporting the use of the social norms approach of identifying and reducing self-other differences in order to reduce the associated negative consequences. Social norms theory has most often been applied to misperceptions of alcohol use, however, other norms such as those of sexual behavior, smoking, and cheating have also been investigated. Social norms theory draws a distinction between “perceived norms,” what individuals think others believe, and “actual norms,” the true average beliefs held by the group (Berkowitz, 2004).

**Descriptive Norms** – Descriptive norms describe the quantity and/or frequency of alcohol consumption. They are “based largely on observations of how people consume alcohol in discrete drinking situations” (Borsari & Carey, 2003, p. 331).

**Injunctive Norms** – Injunctive norms describe the level of social approval given to a behavior (i.e. drinking alcohol). Injunctive norms “assist an individual in determining what is acceptable and unacceptable social behavior” (Borsari & Carey, 2003, p. 331).

**Assumptions**

In conducting this study there were several assumptions that were acknowledged.

It was assumed:
1. The self-report measures of alcohol use (quantity and frequency) and social approval were reliable and valid.

2. Students were truthful and honest about their alcohol use and attitudes. Social desirability did not significantly affect the answers given by participants, nor did the lack of total anonymity significantly affect responses.

3. The information about the “actual norms” provided to leaders as part of the training intervention was more conservative than their own perceptions of those norms. Those leaders, in turn, passed on information that was more accurate and conservative than the beliefs of the incoming students.

4. There was no significant diffusion of treatment between the experimental group leaders and the control group leaders.

5. Survey respondents were an accurate representation of the incoming students and their respective study groups.

**Limitations**

While every effort was made to conduct a rigorous study, several limitations must be noted. The data collected is only one way to measure alcohol use and attitudes. Other methods exist but were not used. Furthermore, the nature of pre-orientation programming is such that, with few exceptions, participation is voluntary and limited to only a portion of the student body. While efforts were made to use a comparison group in order to limit internal validity threats, selection bias could not be totally eliminated. Other limitations included:
1. The design of this study introduced a test fatigue threat for the outdoor orientation groups. These two groups completed the survey measure one more time than the comparison group. Rates of attrition may have differed due of this difference.

2. Alcohol use and attitudes were only measured for one semester (four months) following the intervention. Different results may have been obtained if data were collected after two semesters or more (see Gass, 1987, 1990; Gass, Garvey, & Sugerman, 2003).

3. This study included first-year college students at a particular college and therefore may not be generalizable to college students in general.

4. The social norms training for the leaders was not a pre-existing component of the program. It is unknown to what extent the leaders felt comfortable introducing this information into their groups, or whether they were resistant to participating.

5. Pre-orientation and orientation programming is only one source of social norms information about alcohol use. This study cannot control for other sources of information about alcohol use and social norms received by participants before, during, or after their pre-orientation or orientation experiences.

6. Attrition over the course of the semester was significant. At Time 4, survey participants were significantly different from participants at Time 1.

7. The results of this study are only generalizable to outdoor orientation programs at other schools in so far as the independent variable (i.e. the outdoor orientation program) has similar structure and content.
Significance

Preparing students to succeed in the college environment and educating them about the responsible use of alcohol are major concerns of every institution of higher education. The results of this study have the potential to add significantly to both of these areas. Specifically, this study will add to the literature in the fields of college orientation, outdoor orientation, social norms, and alcohol education and prevention.

Orientation programs as a means of bridging the gap between high school and college/university have gained widespread acceptance by institutions of higher education. Among the many goals of orientation programming is to introduce students to the social, academic, and cultural expectations of their new milieu. Compatibility between student expectations and the college environment is one of the strongest predictors of student adjustment and success (Gass, 1986, 1999; Noel, 1976). The results of this study may provide valuable insight into how colleges and universities can create better alignment between student expectations and the college environment, especially concerning alcohol use. The possibility exists that similar techniques could be used to reduce discrepancies in other areas, e.g. diversity, tolerance, and eating disorders (Curtis, 2006).

According to Gass (1987), outdoor orientation programs should be “evaluated in the same manner as traditional orientation programs” (p. 30) and must also adopt many of the same goals to be equally valued. Educating students about healthy decision making, and responsible alcohol use are common goals of many traditional campus orientation programs. This study has the potential to demonstrate the effectiveness of outdoor orientation programs in creating more accurate and healthy attitudes about drinking on campus. The use of outdoor orientation programming to welcome first-year students to
campus is increasingly popular on college campuses (Bell, 2008; Bell et al., in press). However, research to understand the effects of these programs has been limited (Bell, 2005; Davis-Berman & Berman, 1996; Vlamis, 2002). This study will contribute to the growing body of outdoor orientation program literature.

Alcohol education is an important topic on many college campuses. Programs like TIPS (Training for Intervention ProcedureS), Alcohol.edu, and social norms marketing campaigns all represent themselves to colleges and universities as ways to reduce alcohol abuse and the associated negative consequences. In May of 2008, Princeton University released a strategic plan to address high risk drinking on campus. The report states, “High-risk drinking at colleges and universities, including Princeton University, is an important and complex issue. Most institutions of higher education are engaged in efforts to address this issue” (p. 3). The report defines high risk drinking as “any time the health, well-being, or safety of the individual drinking or others is compromised or when community standards are compromised” (2008, p. 3). The results of this study have the potential to support college and university efforts to reduce problematic drinking and promote student success. Furthermore, the type of intervention proposed in this study could be integrated into preexisting outdoor orientation programs, requiring little additional effort or investment from the university while accomplishing many other goals simultaneously.
CHAPTER II

REVIEW OF LITERATURE

Introduction

The social norms literature included in this review focuses on the norms of alcohol use by students in college or university settings. The review is divided into five sections: alcohol use by college students, social norms theory, types of norms, interventions, and contradictory evidence. Also reviewed is the literature on outdoor orientation programs, a subset of the adventure education literature, that describes outdoor programs that aid in the transition of students from high school to college “using wilderness camping and adventure activities with incoming students working together in small groups” (Bell, 2008, p. 21). The literature on this area of study is small, but growing, and includes a mix of published studies (both peer-reviewed, and not), as well as unpublished masters theses and doctoral dissertations. The review of outdoor orientation research includes three sections: history and background, goals, and outcomes.

Alcohol Use by College Students

According to the National Institute on Alcohol Abuse and Alcoholism (NIAAA), 83 percent of college students drink alcohol, and 41 percent report drinking five or more drinks on one occasion (i.e. “binge drinking”) in the past two weeks (National Institutes
of Health, 2008). In 2001, it is estimated there were 1,717 alcohol-related accidental deaths among college students, a six percent increase from 1998 (Hingson et al., 2005). Given that "longitudinal data support an interpretation that suggests that college environments, and other factors associated with being a college student, are instrumental in increasing alcohol use" it is imperative that colleges and universities create strategies that mitigate this increase (O'Malley & Johnston, 2002, pp. 37-38).

The use of alcohol by both of-age and under-age students on college and university campuses is a critical concern for most, if not all, institutions of higher learning. In addition to the 1,500+ deaths, it is estimated there were 599,000 injuries related to alcohol use in 2001 (Hingson et al., 2005). Furthermore, alcohol use by college students has been linked with numerous non-physical negative consequences such as, lower academic performance, more frequent trouble with authority, and difficulties in personal relationships (Perkins & Berkowitz, 1986). Presley et al. (1998) found that students who consumed a higher number of drinks per week tended to also have lower GPAs. It is also important to consider that the drinker is not the only one affected by drinking. Hingson et al. estimated there were more than 696,000 students assaulted by another student who had been drinking, and more than 97,000 students were victims of alcohol-related sexual assault. In addition to these human consequences, drinking has numerous collateral consequences such as property damage and other vandalism.

In order to deal with the magnitude and severity of alcohol related consequences experienced by students, the NIAAA recommends that schools use interventions that fit with the culture of their campus, and use a variety of methods including individual, environmental, and campus-community strategies (National Institutes of Health, 2008).
This study examined the inclusion of a targeted social norms intervention in an outdoor orientation program, testing the theory that including normative messages about alcohol use in this type of environment would make the information highly credible, salient, and proximal to the incoming students.

**Social Norms Theory**

Among the environmental and campus-community based strategies suggested by the NIAAA are a group of interventions called social norms interventions. This approach is based on the premise that most college students overestimate alcohol use by their peers, and this overestimation causes some students to drink more than they otherwise would in order to “fit-in” with their perceptions of the norm. It has also been suggested that these misperceptions may lead students to encourage their non-drinking peers to begin drinking (Berkowitz, 2005). A large number of studies have documented this overestimation in both the general college population, and in specific sub-populations, such as fraternity members, resident advisors, first-year students, and athletes (Baer, 1994; Baer & Carney, 1993; Baer, Stacy, & Larimer, 1991; Bourgeois & Bowen, 2001; Far & Miller, 2003; Peeler, Far, Miller, & Brigham, 2000; Perkins & Berkowitz, 1986; Perkins, Meilman, Leichliter, Cashin, & Presley, 1999; Perkins & Wechsler, 1996; Prentice & Miller, 1993; Schroeder & Prentice, 1998; Sher, Bartholow, & Nanda, 2001; Steffian, 1999; Trockel, Williams, & Reis, 2003). Based on the presence of these misperceptions, social norms interventions seek to reduce student alcohol use by correcting misperceptions, which, theoretically, reduces the pressure students feel to conform to the (misperceived) campus norm. Theoretically, when students understand
that most of their peers are moderate drinkers, they feel less pressure to consume large quantities of alcohol in order to “fit in.”

Berkowitz (2004, 2005) described seven assumption upon which social norms theory is based:

Table 1
Berkowitz’ (2005) Seven Assumptions of Social Norms Theory

<table>
<thead>
<tr>
<th>Assumption</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Actions are often based on misinformation about or misperceptions of others’ attitudes and/or behaviors.</td>
</tr>
<tr>
<td>2.</td>
<td>When misperceptions are defined or perceived as real, they have real consequences.</td>
</tr>
<tr>
<td>3.</td>
<td>Individuals passively accept misperceptions rather than actively intervene to change them, hiding from others their true perceptions, feelings or beliefs.</td>
</tr>
<tr>
<td>4.</td>
<td>The effects of misperceptions are self-perpetuating, because they discourage the expression of opinions and actions that are falsely believed to be nonconforming, while encouraging problem behaviors that are falsely believed to be normative.</td>
</tr>
<tr>
<td>5.</td>
<td>Appropriate information about the actual norm will encourage individuals to express those beliefs that are consistent with the true, healthier norm, and inhibit problem behaviors that are inconsistent with it.</td>
</tr>
<tr>
<td>6.</td>
<td>Individuals who do not personally engage in the problematic behavior may contribute to the problem by the way in which they talk about the behavior. Misperceptions thus function to strengthen beliefs and values that the “carriers of the misperception” do not themselves hold and contribute to the climate that encourages problem behavior.</td>
</tr>
<tr>
<td>7.</td>
<td>For a norm to be perpetuated it is not necessary for the majority to believe it, but only for the majority to believe that the majority believes it.</td>
</tr>
</tbody>
</table>

Assumptions one and two are supported by a long history of research on conformity (e.g. Asch, 1952). In addition, several studies have found either correlations between misperceptions of alcohol norms and drinking behavior (e.g. Perkins & Wechsler, 1996; Trockel et al., 2003), or that perceptions at time one predict drinking behavior at time two (Botvin, Griffin, Diaz, & Ifill-Williams, 2001; D'Amico et al., 2001; Prentice & Miller, 1993; Sher et al., 2001; Steffian, 1999).

A classic demonstration of assumptions three and four occurs frequently in classrooms. A teacher stops during a lecture to ask if the class has any questions. Nearly every student is confused, but before raising their hands, each student looks around to
gauge the comprehension of the rest of the class. Seeing no other hands raised, a student assumes he or she is the only one who did not understand the lecture. In this example, each student has passively accepted their [mis]perception as accurate rather than acting to express their need for clarification. This misperception is self-perpetuating because each student suppresses their personal need for clarity, which simultaneously encourages all the other students to remain quiet in order to avoid the embarrassment of appearing less intelligent than his or her peers (Miller & McFarland, 1991).

Assumption five is validated by a number of studies that have used social norms interventions to reduce students misperceptions of alcohol use, and/or to reduce students use of alcohol (e.g. Brown, 2004; Bruce & Keller, 2007; DeJong et al., 2006; Far & Miller, 2003; LaBrie, Hummer, Neighbors, & Pedersen, 2008; Larimer et al., 2001; Mattern & Neighbors, 2004; Perkins & Craig, 2006; Schroeder & Prentice, 1998; Steffian, 1999). In addition, Asch (1952) found that individuals were more likely to voice their true opinion when there was at least one person in the group who agreed with them.

Assumption six often applies to resident advisors, faculty, and staff at colleges and universities, who tend to be moderate in their own attitudes and use of alcohol, but nonetheless susceptible to misperceptions of the norms regarding alcohol use by students. These individuals, who hold positions of influence, may contribute to the misperceptions of students by communicating their overestimations of student alcohol use, even though they themselves do not engage in excessive alcohol use (Berkowitz & Perkins, 1986b; Perkins, 2002). This conceptually interesting idea has not been tested on peer leadership positions such as, orientation leaders, club officers/captains, or outdoor orientation program leaders. To the extent that most students tend to overestimate alcohol use by
other students, it seems could be “carriers of the norm,” regardless of their personal alcohol use. If they do harbor these misperceptions, it is highly likely they are passing these misperceptions on to the students they lead.

Studies of alcohol misperceptions have routinely supported assumption seven, by documenting the moderate personal attitudes most college students hold in regard to drinking (Perkins & Berkowitz, 1986). None-the-less, the perception of most students is that the attitude on campus is much more permissive of alcohol use. This phenomenon, widespread public belief in a norm that is privately rejected is often described as pluralistic ignorance. Pluralistic ignorance forms the psychological basis of social norms theory along with other social phenomenon, including fundamental attribution error, conformity, and cognitive dissonance. These theories, and their contributions to social norms theory are discussed in more detail below.

**Pluralistic Ignorance**

Pluralistic ignorance was first described by Allport (1924; Katz & Allport, 1931), as any situation “in which individuals hold unwarranted assumptions about the thoughts, feelings, and behavior of other people” (O'Gorman, 1975, p. 314). This study uses the definition of Miller and McFarland (1991, p. 287) who define pluralistic ignorance as “a state characterized by the belief that one’s private thoughts, feelings, and behaviors are different from those of others, even though one’s public behavior is identical.”

While the phenomenon of pluralistic ignorance has a long history as an explanation for various behavioral quandaries, not until recently have researchers begun to investigate its consequences (Miller & McFarland, 1987). Pluralistic ignorance has been documented in numerous studies (Bourgeois & Bowen, 2001; Hines, Saris, &
Throckmorton-Belzer, 2002; Prentice & Miller, 1993; Schroeder & Prentice, 1998; Suls & Green, 2003; Wardwell, 1999) in which students routinely and systematically overestimate the prevalence of alcohol use by their peers even though they publicly engage in similar behaviors. In the context of social norms theory, pluralistic ignorance is a precursor to behavioral change. Students who overestimate the use and approval of alcohol by their peers, are more likely to use alcohol in a way that is congruent with their perception of the norm (Berkowitz, 2005).

**Fundamental Attribution Error**

A student’s pluralistic ignorance of the alcohol use patterns of her peers is often the result of a fundamental attribution error. First described by Ross (1977), fundamental attribution errors occur when an individual believes the behavior of others is being influenced by their personality rather than by their environment. This mis-attribution often occurs when the observer’s behavior is similar to the behavior of those around him, a discrepancy called the actor-observer bias. For example, a student at a party or bar may consume a similar amount of alcohol compared to those around her. However, she will attribute the behavior of her peers to their personality (i.e. they enjoy drinking) while she will attribute her own behavior to the situation (i.e. she feels pressured to drink in order to fit in). Baer et al. (1991) hypothesized that the consistent overestimation of peers drinking behavior may be the result of a fundamental attribution error. In other words, the belief that others have a greater motivation to drink, leads one to conclude that they also drink more.
Social Conformity

As mentioned above, social norms theory suggests individuals often increase their own alcohol use in order to conform to their misperception of the campus drinking norm. The hypothesized mechanism for this change is that the more students' overestimate the approval and use of alcohol by their peers, the more likely they are to adjust their own attitudes and behaviors to be more inline with their perceptions of the norm. A long history of research on conformity supports this hypothesis (Asch, 1952; Sherif, 1936). Both Asch and Sherif found individuals within a group would conform to the actions or opinions of a group, even when they privately believed the group to be wrong. For example, in Asch’s study individuals were asked to match the length of a line with one from a series of three lines. Despite the simplicity of the task, the majority of participants gave wrong answers a majority of the time, when in a group of confederates who all gave incorrect answers.

In the context of alcohol use on a college campus, when a student is in a social situation where he believes everyone to be consuming alcohol, there is considerable pressure to conform to the norm of alcohol consumption in order to avoid seeming or feeling deviant. Neighbors et al. (2006) found “both perceived frequency and perceived quantity norms were found to be associated with later drinking” and these results were “in agreement with basic research on conformity” (p. 296). Marks, Graham & Hanson (1992) found “prevalence estimates at Time 1 predicted level of own use of alcohol at Time 2, after controlling for own use at Time 1” (p. 96). Like Neighbors et al., Marks et al. hypothesized this change in own use of alcohol at time two was the result of conforming to the prevalence norm from time one.
**Cognitive Dissonance**

Like conformity, cognitive dissonance theory helps to explain why misperceptions of a norm may lead individuals to change their attitudes and behaviors. While conformity helps to explain why students will drink more in order to match their own behavior to their perception of the norm, cognitive dissonance helps to explain why social norms interventions are successful in reversing this effect. When an individual learns the true norm (i.e. the actual drinking norms on campus) is different from her own behavior and/or perception of the norm, she will experience cognitive dissonance, i.e. a feeling of discomfort caused by holding a belief, while simultaneously voicing a contradictory one (Festinger, 1957). It is hypothesized that this feeling of dissonance will lead her to drink less (or change her attitude/belief) in order to reduce the dissonance between her previous belief (i.e. most students large quantities/frequently), and her new knowledge of the actual norm (i.e. most students drink conservatively). An important caveat is that the greater the external pressure used to correct the misperception, the less likely an individual is to change her behavior to come into agreement with the norm (Festinger & Carlsmith, 1959). For example, a student who consumes a large quantity of alcohol is less likely to reduce her behavior if she perceives the college administration has exerted a large degree of external influence in order to change her behavior. In contrast, if the student internalizes the change in perception of the norm, she is more likely to change her behavior.

These four psychological phenomenon: pluralistic ignorance, fundamental attribution error, social conformity, and cognitive dissonance all contribute to a theoretical understanding of why students frequently believe their peers are more
permissive and consume more alcohol than they do themselves, and why these beliefs lead students to change their own behaviors. In addition, these theories help to explain why many students, when faced with the belief that other students drink more, will change their own behavior to match this perception. Social norms theory suggests educating students about pluralistic ignorance, and the actual norms of alcohol use will help to reduce the pressure students feel to use alcohol in order to conform socially. The current study trained outdoor orientation program leaders in using social norms theory to reduce the pluralistic ignorance of incoming students thereby reducing the likelihood they would conform to a misperceived norm.

**Types of Norms**

The theories described above have all contributed to the development of the social norms approach as a means for addressing the issue of alcohol use/abuse on college campuses. Recently, scholars have begun to refine the social norms approach, in part, by considering the impact of different types of norms on thinking and behavior. One critical distinction has been between descriptive norms and injunctive norms.

**Descriptive Norms**

Early adopters of the social norms approach focused on students’ misperceptions of how much and how often their peers were consuming alcohol (Fabiano & Perkins, 2003; Glider, Midyett, Mills-Novoa, Johannessen, & Collins, 2001; Haines, 1996; Haines, Barker, & Perkins, 2003; Haines & Spear, 1996; Jeffrey, Negro, Miller, Frisone, & Perkins, 2003; Johannessen, Collins, Mills-Novoa, & Glider, 1999; Perkins, 2002, 2003). These types of norms, those of quantity and frequency are “descriptive norms.”
According to Borsari and Carey (2003) descriptive norms “refer to the perception of others’ quantity and frequency of drinking (the norm of 'is') and are based largely on observations of how people consume alcohol in discrete drinking situations” (p. 331).

**Injunctive Norms**

More recently, researchers have begun to investigate not just misperceptions of quantity and frequency, but also misperceptions of approval of drinking behaviors (Borsari & Carey, 2003; Carey, Borsari, Carey, & Maisto, 2006; Cho, 2006; Lee, Markman Geisner, Lewis, Neighbors, & Larimer, 2007; Neighbors, Lee, Lewis, Fossos, & Larimer, 2007; Real & Rimal, 2007; Rimal, 2008; Rimal & Real, 2003, 2005). Individuals who believe their peers are highly approving of risky drinking behaviors may be more influenced by descriptive norms. These “injunctive norms” “refer to the perceived approval of drinking (the norms of ‘ought’) and represent perceived moral rules of the peer group” (Borsari & Carey, 2003, p. 331). Unlike descriptive norms, which are fairly straightforward to measure, injunctive norms have been measured using a number of different methods by a myriad of different researchers. Injunctive norms have been described as “social approval,” “importance of others beliefs as well as their motivation to comply with those beliefs” (i.e. subjective norms, cf. Ajzen & Fishbein, 1980), “benefits to oneself,” “benefits to others,” and “perceived opinions of relevant others,” to name just a few. However, while injunctive norms have been conceptualized in many different ways, there seems to be a consistent finding that individuals overestimate their peers approval of alcohol consumption. In fact, in a meta-analysis of 23 studies, Borsari and Carey found self-other differences (i.e. pluralistic ignorance) were greater for injunctive norms than for descriptive norms. However, Carey and Borsari
found only two published studies looking at the effects of interventions that attempted to correct misperceptions of injunctive norms. This lack of published research makes it difficult to evaluate the effectiveness of these interventions targeting injunctive norms. From a theoretical perspective, Rimal and colleagues (Lapinski & Rimal, 2005; Real & Rimal, 2007; Rimal, 2008; Rimal, Lapinski, Cook, & Real, 2005; Rimal & Real, 2003, 2005) have hypothesized that injunctive norms both mediate and moderate the relationship between descriptive norms and intention to consume alcohol.

**Choosing Norms**

Although clarifying the difference between descriptive norms and injunctive norms has been an important advancement in social norms theory, there are other considerations when creating a social norms message. According to Berkowitz (2005, p. 203) “selecting the most relevant and salient norms for a particular intervention…should be an integral part of planning a social norms intervention.” There are three important factors to consider when making these decisions, proximity, saliency, and credibility.

**Proximity** – Norms are described based on a reference group. In the social norms literature there are two reference groups commonly used, “friends,” and “students in general.” The choice of which norm to use is not always straightforward. Cho (2006) found:

The influences of friends’ norms are stronger than those of campus and those of descriptive norms are stronger than injunctive norms. Friends’ descriptive norms influenced frequent and occasional binge drinkers’ behavior most strongly, whereas the campus descriptive norm and self-efficacy influenced non-binge drinkers’ behavior (p. 417).

While friends’ norms tend to be more influential, misperceptions tend to be larger for more distal reference groups. Student norms also tend to be easier to measure and change.
In fact, friends norms are almost impossible to measure and use in an intervention, unless it is an individualized intervention, or a targeted intervention with a relatively small and intact group (i.e. fraternities, sports teams, etc.). In the case of incoming students, the use of friends norms is not feasible, however using data from previous first-year students would provide more proximal norms than using campus wide data.

**Salience** – Different social norms researchers have framed the issue of salience in different ways. Berkowitz (2005) conceptualized salience similarly to proximity. He cautioned that students on large campuses may not relate to the notion of the “average student” or “student in general” and therefore norms messages based on these reference groups may be less influential. On the other hand, the norms of the “average student” may be meaningful on a small campus where there is a feeling of community. Berkowitz suggested that on larger campuses the norms of a particular sport or affinity group are good alternatives to broader norms. Other researchers have approached saliency as an issue of which norms are most cognitively available. Kallgren et al. (2000) suggested even strongly held norms (i.e. the norm against littering in a public place) did not influence behavior unless the norm was made salient by some sort of focusing event (i.e. witnessing someone litter in a pristine environment). While their study was not related to alcohol use, the concept of normative focus could be transferred to alcohol use. An individual may be more focused on the norm against excessive alcohol use after viewing a sick or passed out individual, or when confronted by a drinking related fatality. The opposite effect is noted by Baer et al. (1991) and Weaver et al. (2007) who describe the high level of salience a single highly visible or vocal individual can have on the perception of a norm. Baer et al. point out that excessive drinking on a single occasion is
highly memorable, while studying, which arguably occurs far more often than heavy drinking, is much less memorable and therefore less salient. The challenge for social norms interventions is to make responsible/moderate alcohol use more salient than excessive/irresponsible alcohol use.

Credibility – When presenting students with the true norms of drinking on campus, Berkowitz (2005) points out that these messages suggest what students believe about the campus drinking norm is inaccurate. If the source of information, or the information, itself is not believable to students, the intervention is less likely to succeed. Lack of credibility may be the result of an unappealing message (so called “shock campaigns”), an un-trusted source (i.e. a controversial administrator), or an unclear or unknown data source (i.e. when students do not know or understand how the normative data were obtained). Another credibility threat can occur when important stakeholders do not support the message that most students are moderate drinkers, as in a university president who contradicts the message of moderate drinking by emphasizing problematic alcohol use public statements.

Social Norms Interventions

Social norms interventions, based on the theories and typologies described above, are often categorized in terms of the size of the intended audience. Berkowitz (2005) described three levels of social norms interventions: universal, selective, and indicated.

Universal Prevention

Universal prevention, i.e. social norms marketing campaigns, targets entire campus communities, without regard for whether every member of the community would
benefit from such an intervention. This type of intervention has been criticized due to the potential for correcting the misperceptions of students who actually have more conservative attitudes and drinking behaviors than the true campus norms (Barnett & et al., 1996; Peeler et al., 2000; Perkins & Berkowitz, 1986; Wechsler et al., 2003). Other researchers suggest universal campaigns are effective for moderate/non-drinkers because those students may be “carriers” of an elevated perception of drinking norms and attitudes. These individuals may contribute to an atmosphere of permissive drinking norms even though they themselves are not excessive drinkers.

While some have criticized universal prevention approaches (Clapp, Lange, Russell, Shillington, & Voas, 2003; Russell, Clapp, & DeJong, 2005; Wechsler et al., 2003), a number of studies have shown positive results both in terms of correcting misperceptions, as well as reducing alcohol use (Fabiano & Perkins, 2003; Glider et al., 2001; Haines, 1996; Haines et al., 2003; Haines & Spear, 1996; Johannessen et al., 1999; Perkins, 2002, 2003). The overall efficacy of social norms marketing campaigns is still debated in the literature (see DeJong et al., 2006; Wechsler et al., 2003 for in-depth discussions of both sides).

**Indicated Prevention**

Social norms interventions used with individuals as part of a counseling type intervention are described by Berkowitz (2005) as indicated prevention, or individualized social norms interventions. These types of interventions are typically used with very high-risk users/abusers of alcohol, those most likely to be experiencing false consensus as a means of rationalizing their own problem drinking behavior. A number of researchers have used individualized social norms interventions to bring about reductions in alcohol
Selective Prevention

Social norms interventions that target just one group are described by Berkowitz (2005) as “selective prevention” or alternatively as “targeted social norms interventions.” These interventions are designed for groups “at-risk” of higher levels of alcohol use than students-in-general. These populations include: fraternity and sorority members, student athletes, freshman academic classes, freshman or entering students in settings other than the classroom, students living in residences near areas where excessive drinking takes place, specific ethnic or cultural groups, and members of student organizations with a social focus (Far & Miller, 2003).

A number of researchers have used targeted social norms interventions to reduce either misperceptions of alcohol use, or actual alcohol use (Barnett & et al., 1996; Berkley-Patton, Prosser, Mccluskey-Fawcett, & Towns, 2003; Far & Miller, 2003; Mattern & Neighbors, 2004; Peeler et al., 2000; Schroeder & Prentice, 1998; Steffian, 1999). Far and Miller (2003) describe the development of the “small groups norms-challenging model” (SGNM), an adaptation of the social norms approach for use with smaller, “at-risk” populations. This adaptation is supported by the finding that the norms of more proximal reference groups are more influential in predicting/affecting individuals drinking attitudes/behaviors (Cho, 2006). SGNM interventions use normative data collected from the group receiving the intervention in addition to normative data from the larger campus. Far and Miller suggested this type of intervention would be appropriate with any membership or reference group in which “people have a cohesive group
identity” (2003, p. 113). Specifically, they suggest “freshman or entering students in a setting other that the classroom” as a group who would benefit from a SGNM intervention (2003, p. 130). A group of entering first-year students on an outdoor orientation program seems to be exactly the type of cohesive group Far and Miller describe. The SGNM intervention itself consists of “a one-time, forty-five-minute, intensive, interactive program facilitated by a respected group leader or peer presenter, which makes the norms correction message more credible to group members” (Far & Miller, 2003, p. 113). The success of this shorter-length intervention speaks to the strong influence of delivering social norms messages through proximal, respected, and credible peer leaders. Well-trained, upper-class, student, outdoor orientation leaders may be ideal candidates for delivering targeted social norms messages to incoming students; a group uniquely at-risk for heavy alcohol use (Baer, Kivlahan, & Marlatt, 1995; Leibsohn, 1994; Perkins & Wechsler, 1996; Wechsler & Isaac, 1994). Schroeder and Prentice (1998) hypothesized that incoming students were more susceptible to social norms interventions because they “did not already have well-established drinking patterns within the local environment” and their perceptions “of the campus and their peers were not yet as well entrenched as those of older students” (p. 2157).

A number of studies support the efficacy of targeted social norms interventions, like the one used in the present research, in working with incoming college students. Peeler, Far, Miller, & Bringham (2000), Schroeder and Prentice (1998), and Wardwell (1999) all used targeted social norms intervention with groups of first-year college students. All three interventions reported changes in attitudes and/or behaviors in the desired direction (i.e. less drinking and/or less approval of drinking).
Peeler et al. (2000) compared the experimental (SGNM) psych-106 classes with control classes that participated in the standard alcohol curriculum. At the end of the semester, Peeler et al. found students in the experimental sections of the class displayed a significant increase in the accuracy of their perceptions of campus-wide alcohol attitudes, decreases in their own attitudes regarding alcohol, and a significant decrease in the amount of alcohol consumed per occasion, as compared to the control group.

Schroeder and Prentice (1998) randomly assigned incoming first-year college students to orientation groups with either a peer-oriented (i.e. social norms) alcohol discussion or an individual-oriented, decision making alcohol discussion. In the peer-oriented groups, students were shown data on alcohol-related pluralistic ignorance among students at their university, and were encouraged to discuss how these misperceptions occurred, and what impact they may have on the social dynamics surrounding alcohol use. The individual-oriented groups took part in discussions about making responsible personal decisions in a drinking situation. All discussion groups were lead by upper class peer facilitators (i.e. second, third, and fourth year students). Facilitators took part in a three-hour training, several weeks before the intervention, to prepare them to lead either the peer-oriented or individual-oriented groups. Both interventions lasted one hour. Four to six months later, participants in the peer-oriented group reported significantly less alcohol use than students from the individually oriented group (3.10 drinks per week, compared to 5.05 drinks per week).

Wardwell (1999) compared the self-other differences (i.e. pluralistic ignorance) of participants on an outdoor orientation program, to the self-other differences of students on a wait-list (who did not participate in the outdoor orientation program), and students
who did not to participate in any pre-orientation program. Although the leaders of the trips were made aware of the study, they were not asked to conduct any specific social norms intervention. According to Wardwell,

[Outdoor orientation] trips are great opportunities for freshmen to get to know other freshmen and learn about Princeton from the upper-class leaders… Although the majority of discussions are on a one-on-one basis, it is not unlikely for the leaders to answer questions that freshmen have to the whole group because they feel it is a question that other freshmen may have. (p. 15)

The wait list group and no pre-orientation groups did not receive any intervention, and arrived on campus after the outdoor orientation groups had returned from their trips.

Wardwell (1999) reported two sets of results: post-trip changes in outdoor orientation participants self-other-differences (SODs), and between group differences in SODs at an eight month follow-up. Wardwell found outdoor orientation participants experienced significant changes in their “desire to party” SOD. Desire to party was measured by averaging the scores of two questions: “How many nights per week do you expect to ‘go out’ and party during your first year at Princeton?” and “How many nights per week do you expect to drink at Princeton during your first year?” Wardwell found that before the trip students believed they had significantly less desire to party than “typical students.” After the trip, participants had a significantly smaller SOD. This change resulted primarily from a large decrease in perceptions of other students’ desire to party. This reduction in the perception of other students’ desire to party may indicate that outdoor orientation helps create a more conservative sense of what the “average” student is like. This study builds on the results of Wardwell, by incorporating a more formal intervention strategy operationalized as a training model for outdoor orientation program
leaders similar to those described by Far and Miller (2003) and Schroeder and Prentice (1998).

**Contradictory Evidence**

While social norms interventions have been implemented with successful results at a number of colleges and universities, the approach is not without critics. A number of researchers have found social norms interventions have no effect, or counter intuitive effects.

Clapp et al. (2003) used a non-equivalent comparison group design to assess the effectiveness of a targeted social norms intervention to reduce heavy drinking among students in two residence halls. They found the experimental group had greater reductions in their misperceptions of alcohol use by their peers versus the comparison group. However, they also found students in the experimental dorm significantly increased the mean number of days drinking in the last month, whereas the comparison group decreased slightly. The authors suggested the need for more quasi-experimental studies on the effectiveness of social norms campaigns (as opposed to the single group designs common in social norms research), and cautioned universities against adopting the social norms approach without careful consideration of its weaknesses. The authors noted several limitations of their study including non-random selection and assignment, limited duration of treatment, and possible diffusion of treatment.

Russel et al. (2005) reported on a failed social norms marketing campaign (universal prevention) at a large urban university. The marketing campaign was unsuccessful in that the majority of students were not aware of the campaign, and of
those who recognized the campaign slogan, a majority could not accurately identify the purpose of the slogan. In addition, there was no difference in the perception of campus drinking norms by students who recognized the slogan versus those who did not. Russel et al. concluded the message was not salient, understandable, or memorable. Reaction to the advertisement included statements such as: "gross," "distasteful," "sick," and "guy puking," indicating the marketing campaign used visual elements that conveyed the norm of overuse and negative consequences, which may have overpowered the message of moderate alcohol use delivered through the less noticeable text.

Wechsler et al. (2003) analyzed historical data from 37 colleges that had conducted social norms marketing campaigns and 61 colleges that had not. They found no significant decreases in any of the seven alcohol consumption measures at schools with social norms marketing campaigns. They did find significant increases in two of the measures, percentage of students who drank alcohol in the last month and drinking 20 or more drinks in the last 30 days, at schools with social norms campaigns. They found no significant increases or decreases in any of the seven measures at schools without social norms campaigns. Wechsler et al. point out that the risk of increasing alcohol use among light or non-drinkers was hypothesized in early research on social norms campaigns (Perkins & Berkowitz, 1986) and urge further study of this phenomenon. Wechsler et al. noted that the programs they included did not necessarily meet the criteria for well-designed social norms interventions. A similar critique was levied by DeJong et al. (2006) who conducted a similar large-scale analysis of social norms campaigns (using more rigorous fidelity measures) and found significant improvements in schools with social norms campaigns.
Berkowitz (2004) pointed out that as social norms interventions have become more prevalent, there have been more examples of unsuccessful programs. He cautioned against using these examples to conclude the social norms approach is flawed, and instead suggested researchers and programmers use these examples to understand what went wrong and why, in order to strengthen future efforts.

**History and Background of Outdoor Orientation Programs**

As described above, targeted social norms interventions focus on specific high-risk groups. Schroeder and Prentice (1998), as well as Wardwell (1999) both applied targeted social norms interventions to incoming groups of students during orientation and pre-orientation programs. Colleges and universities have been using on-campus orientation programs to help ease the transition of students from high school into college ever since Boston College welcomed its first-year class onto campus early in 1888 (Gass, 1987). The development of outdoor orientation programs from the first programs at Dartmouth in 1932 and Prescott in 1968, to the 164 programs in existence in 2006 has been well documented by Bell, Holmes, & Williams (in press). While first used primarily to introduce students to the outing club, the efficacy of these programs as college orientation experiences has since been recognized (Bell et al., in press).

While the 164 programs identified by Bell et al. (in press) shared many similarities, there was a wide range in exactly how they were structured. One reason for the wide variation may have been the rapid development of these programs (approximately ten new programs are established each year) in relative isolation from one another (Bell et al., in press). Along with the significant growth in the number of outdoor
orientation programs, Bell (2008) also pointed out a “rough dichotomy” between older and younger programs which “may be the result of a shift in program paradigms from 1980s to the 2000s” (p. 23). This dichotomy may be analogous to the change in program focus from introducing incoming students to the outing club, what Bell et al. (in press) called the Dartmouth model, to focusing on student development and the transition to college, what Bell et al. called the Prescott/Outward Bound model. Programs that fall into the Prescott/OB model may generate interest and support by identifying institutional values they can support. One such value is the reduction of high-risk drinking by students. At least two programs, those at Princeton and Harvard Universities, have been training leaders to address alcohol use for a number of years. The social norms approach may prove a valuable asset for more programs to start addressing this important issue.

**Structure of Outdoor Orientation Programs**

A precise delimitation of outdoor orientation program structure is difficult because the content and format of these programs vary widely. A number of studies have sought to describe outdoor orientation programs by identifying as many programs as possible. Gass (1983), O’Keefe (1989), and Davis-Berman and Berman (1996) each used various methods of contacting outdoor orientation programs, however none believed they had been successful in identifying every program in the United States. Bell et al. (in press) conducted a census of outdoor orientation programs in 2006 by contacting every four-year college in the United States that awarded a baccalaureate degree, was accredited, and was primarily residential. In total, 1,758 schools were contacted, and 164 outdoor orientation programs were identified that fit Bell et al.’s definition as working
with small groups of students (fewer than 15 per group), using adventure experiences, and spending at least one night in a wilderness setting.

Davis-Berman and Berman (1996) found 68% of programs used only student leaders (as opposed to a mixture of students and faculty/staff), while Bell et al. found 88% of programs used only student leaders. Whether this difference is the result of programmatic changes in the 10 years between the two studies, or differences in the programs sampled is not clear. If the former, this change may point to changes in the foci of these types of programs, away from academic adjustment and toward more social adjustment. In addition, the increase in using student leaders may have important ramifications for the ways in which incoming students learn about alcohol use. Whether intentional or even recognized, programs that use more faculty and staff leaders are presumably transmitting a much different message about alcohol use than programs that use solely students leaders.

Bell et al. (in press) hypothesized the growth in the number of programs pointed to the integration of outdoor education into college programming and student services. However, they did not indicate if these programs were housed within student life/affairs offices or in stand along offices. In 1996, Davis-Berman and Berman found it was most common for outdoor orientation programs to be administered through student life offices (38%), compared to 27% of programs being operated from a freestanding office. If Bell et al. are correct that outdoor education is becoming more integrated into college programming, one would expect to also see more programs administered by student life or other student services offices, rather than in free-standing offices. In turn, student life
offices may be more likely to incorporate curriculum on responsible alcohol use into their programs.

While much variation exists in the structure of outdoor orientation programs, Bell (2005) and Bell et al. (in press) provided descriptions of the average or majority characteristics of outdoor orientation programs in the U.S. Table 2 describes these characteristics along with the characteristics of program examined in this study.

Table 2
Common structures of outdoor orientation programs (adapted from Bell, 2005 and Bell et al., in press)

<table>
<thead>
<tr>
<th>Program Structure</th>
<th>Average or majority characteristic</th>
<th>Study program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time (length of course, when is the course held)</td>
<td>5-6 days, just prior to registration</td>
<td>Eight days, just prior to on-campus orientation</td>
</tr>
<tr>
<td>Leaders</td>
<td>Student leaders (50% of programs report leaders are unpaid)</td>
<td>Unpaid students, Paid alumni, 1-2 faculty/staff</td>
</tr>
<tr>
<td>Accommodations (e.g., sleeping hygiene)</td>
<td>Camping with no showers or flush toilets (75% of programs use tents)</td>
<td>Camping (in tents) with no showers or flush toilets (except one basecamp trip)</td>
</tr>
<tr>
<td>Activities</td>
<td>Backpacking is most prevalent (75% of programs), but many programs also use ropes courses, canoeing, and trail work</td>
<td>Backpacking, canoeing, combination, kayaking, climbing, service, ropes course</td>
</tr>
<tr>
<td>Group Size</td>
<td>Eight to ten students (Bell et al. define OOPs as having fewer than 15 students per group)</td>
<td>6 to 12 students (the basecamp trip is 16 students)</td>
</tr>
<tr>
<td>Cost</td>
<td>$291</td>
<td>$420</td>
</tr>
<tr>
<td>Cost per day</td>
<td>$51</td>
<td>$52.50</td>
</tr>
<tr>
<td>Population</td>
<td>Undergraduates</td>
<td>Undergraduates</td>
</tr>
<tr>
<td>University management</td>
<td>Campuses are highly mixed in regard to management.</td>
<td>Freestanding department within the Dean of Students Office</td>
</tr>
</tbody>
</table>

As Table 2 indicates, the outdoor orientation program described in this study is typical in terms of much of its program structure. Notable exceptions include the use of
paid alumni leaders, and the total cost of the trip, however the difference in cost is negligible when considered as cost/day. While the external validity of any outdoor orientation study is limited by the specifics of the program in question, at least on these structural elements, the study program is similar to the average/majority traits of outdoor orientation programs in the U.S.

In addition to program structure, programs also vary widely in their goals for incoming students. Though different programs tend to have different goals, there does seem to be an increasing trend for outdoor orientation programs to have goals related to student outcomes and support the overall mission of the institution in which the program is housed.

**Goals of Outdoor Orientation Programs**

All programs that responded to Davis-Berman and Berman’s (1996) survey had stated goals (a commonality not found by Gass in 1983). The most common goals were a combination of psychological and social growth goals. Some programs also included academic goals (including retention). According to Davis-Berman and Berman (1996, p. 22), “one of the major goals of any orientation program is to increase student retention”. Alignment with the goals of traditional orientation is one way for outdoor orientation programs to validate their existence, especially since, as Galloway (2000, p. 75) pointed out, “an orientation program unable to demonstrate its relative value to an institution though periodic assessment will be open to criticism and question.” In fact, Bell and Vaillancourt (in review) found outdoor orientation programs that were discontinued were often isolated from the rest of campus (i.e. they had not demonstrated their value within the institution). They concluded, “programs that integrate themselves with the campus as
a whole and hire program directors who work to understand campus politics may increase sustainability and avert cuts” (p. 2).

While the goals and values of any one college or university will be highly specific to that institution, a great deal of the published work on outdoor orientation programs has identified retention as a goal (e.g. Davis-Berman & Berman, 1996; Galloway, 2000; Gass, 1986, 1987, 1990, 1999) universally valued by institutions of higher learning. Galloway (2000) described outdoor orientation programs as offering “incoming college and university students the opportunity for an adventurous or challenging experience, as well as important guidance into the academic world they are newly entering” (p. 75).

While Galloway emphasized the advice students receive about college academics, outdoor orientation participants also gain important insights into the social aspects of college. In fact, Bell & Williams (2006) found participants in the Harvard First-Year Outdoor Program were more concerned with social adjustment than academic adjustment. Bell (2005, 2006) found students who participated in outdoor orientation programs reported higher levels of on-campus social support than students in other pre-orientation programs.

One goal of college student adjustment programs that has not received much attention from outdoor orientation program researchers is what Gass (1986, 1999) described as the “compatibility between student expectations and university actualities” (1986, p. 57). Gass (1999, p. 376) summarizing the findings of Noel (1977) wrote:

One of the strongest indicators of student adjustment [is] the relationship between what the incoming student expected college to be like and what it actually was. [Noel] also found that the larger the gap between these two factors, the more difficult the transition for students and the greater their chance of dropping out.
What Noel described as a “gap” might be labeled “pluralistic ignorance” by alcohol researchers. While a few studies have looked at addressing this gap during on-campus orientation programs (Berkley-Patton et al., 2003; Far & Miller, 2003; Schroeder & Prentice, 1998), only one study (Wardwell, 1999) has ever considered the impact of outdoor orientation programs on incoming students perceptions or misperceptions of alcohol use on campus. While there has been a relative lack of research on the topic, a few outdoor orientation programs, notably those at Harvard and Princeton Universities, have decided to provide training for their leaders in the area of alcohol use and social norms.

The evolution of outdoor orientation programs was described by Galloway (2000, summarizing Gass, 1986) as having gone through three phases. The first phase, characterized by the original Dartmouth Outing Club program, involved the use of the wilderness for shared recreation that happened to interpersonal relationships. The second phase was characterized by the use of Outward Bound principles such as personal challenge, reflection, solo, etc. The third and final phase “involves the application of current research on orientation to design programs to meet the needs of incoming students” (p.76). According to Gass (1999) many programs have begun to move into phase three and “have focused program activities on developing certain areas pertinent to student adjustment (p. 374). The incorporation of social norms based interventions to raise awareness of alcohol related issues only serves to enhance outdoor orientation programs ability to address student adjustment issues.
Outcomes of Outdoor Orientation Programs

Research on the outcomes of outdoor orientation programs has been going on since 1971 when Sullivan, Sprunger, and Williams compared participants in wilderness-orientation programs to other student groups in terms of their academic success, number of extra curricular activities, levels of physical strength, and endurance (Bell, 2005). Research into the outcomes of outdoor orientation programs has seen a significant amount of growth since 2005, when Bell identified 26 studies in the area of outdoor orientation programming. In 2009, Bell & Holmes (2009) identified fifty papers on outdoor orientation programs. These 50 included the original 26 as well as eight that existed but were not included in the 2005 list, leaving 16 new papers written between 2003 and 2009. Of these 16 new papers, 12 were research studies, though eight of these were either descriptive or evaluative in nature. Just four (Bell, 2005, 2006; Bobilya, Akey, & Mitchell Jr, 2009; Frauman & Warywold, 2009) used a design that allowed for the testing of a hypothesis. Of those four, only Bell, 2005 and 2006 (which were actually the same study in dissertation and article form) used some procedure to limit internal validity threats.

Bell (2005, 2006) used non-equivalent comparison groups (pre-season athletics, service pre-orientation, and international pre-orientation) to assess the relative impact of an outdoor orientation on social support, compared to other forms of pre-orientation. He found students who participated in the outdoor orientation program reported higher levels of social provisions as measured by the Campus Focused Social Provisions Scale, as compared to students who did not participate in any pre-orientation program. The outdoor orientation participants also had higher scores in all six of the social provisions sub-
factors: attachment, social integration, nurturance, competence/reassurance of worth, guidance, and tangible support/reliable alliance.

While the amount of outdoor orientation program research increased dramatically between 2005 and 2009, there were relatively few studies that met the two critical criteria described by Bell (2005). He suggested studies should both “possess some appropriate rigorous procedure limiting some of the major internal validity threats through the use of comparison groups” and “demonstrate significant differences between students on a wilderness orientation program and other student populations” (p.29). In 2005, Bell identified six studies that met these two criteria. As of 2009, only two of the 12 new studies identified by Bell & Holmes (2009) met both criteria. Table 3 summarizes the six studies identified by Bell in 2005, and adds his work, for a total of seven studies that both limited internal validity threats and showed significant differences between outdoor orientation and some comparison group.

Table 3
*Summary of outdoor orientation studies that have limited internal validity threats and significant results (adapted from Bell & Holmes, 2009)*

<table>
<thead>
<tr>
<th>Study</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stogner, 1978</td>
<td>OOP participants had significantly higher GPAs and levels of self-satisfaction than non-participants.</td>
</tr>
<tr>
<td>Gass, 1986, 1987</td>
<td>OOP participants had significantly higher retention, GPA, and student development outcomes than non-participants. (Retention and GPA differences were only apparent after two semesters.)</td>
</tr>
<tr>
<td>Gass, 1990</td>
<td>Participants from Gass’s 1987 study had significantly higher retention rates than a control group and a comparison group at 12 months time, but only higher than the control group at 42 months time.</td>
</tr>
<tr>
<td>Devlin, 1996</td>
<td>OOP participants reported significantly higher friendship formation than non-participants.</td>
</tr>
<tr>
<td>Kafsky, 2001</td>
<td>OOP participants scored significantly higher in social skills development than non-participants.</td>
</tr>
<tr>
<td>Vlamis, 2002</td>
<td>OOP participants scored significantly higher on student development outcomes than non-participants.</td>
</tr>
<tr>
<td>Bell, 2005, 2006</td>
<td>OOP participants reported higher levels of on-campus social provisions than participants in other pre-orientation programs.</td>
</tr>
</tbody>
</table>
Out of the six studies summarized in Table 3, increased GPA (Gass, 1986, 1987; Stogner, 1978), and increased retention (Gass, 1986, 1987, 1990) are the most often cited outcomes by proponents of outdoor orientation programs. These studies are significant because they provide evidence that outdoor orientation programs lead to outcomes valued by higher education and traditional orientation programs. In as much as social outcomes have not traditionally been valued as highly by institutions of higher learning, the findings of Devlin (1996), Kafsky (2001), and Bell (2005, 2006) have received less attention. However, there is growing evidence that the social support gained by outdoor orientation participants and the academic and retention gains experienced by participants may be correlated (Bell & Williams, 2006). A large number of evaluative studies (see Bell & Holmes, 2009 for a complete list of OOP research) have demonstrated other positive changes in participants in outdoor orientation programs such as: increased self-concept (Wetzel, 1978), self-esteem (Johnson, 1985), adjustment to college (Oravecz, 2002), self-efficacy (Jones & Hinton, 2007), and sense of place and social benefits (Austin, Martin, Mittelstaedt, Schanning, & Ogle, 2009). However, internal validity issues (primarily selection bias) have limited their significance within outdoor orientation literature (Bell, 2005; Gass, 1987).

Wardwell (1999) conducted a research study to compare the pluralistic ignorance of outdoor orientation participants to non-participants, as well as a group of students wait-listed for the outdoor orientation. As described above, Wardwell found participants in the outdoor orientation program experienced significant reductions in their desire to party self-other difference. However, Wardwell did not use any non-equivalent comparison groups as a means of limiting interval validity threats. He concluded the
outdoor orientation program was successful in creating a more conservative estimate of the average students desire to party (i.e. consume alcohol). Although Wardwell’s findings were promising, there were several limitations that, if addressed, would make a much stronger case for the effectiveness of outdoor orientation in reducing pluralistic ignorance and alcohol use by college students. These include: threats to internal validity, the content validity of his survey instrument, history selection threats, mortality threats, the reliability of his measures, and insufficient description of the intervention to allow replication. The current study attempted to address some of these issues.

Although Gass (1987, 1990) and others used techniques to reduce internal validity threats to their quasi-experimental designs, the external validity of any outdoor orientation research findings is limited since “specific models/findings can be interpreted only for those institutions in which studies have been conducted” (1990, p. 37). Vlamis (2002) conducted a study using the same student development instrument as Gass. While Vlamis did find significant differences between outdoor orientation participants and non-participants, the findings were in different subtasks than Gass. Vlamis concluded the effects of outdoor orientation programs were highly dependant on the goals on the individual program. The success of social norms interventions in affecting students alcohol use and attitudes may also be dependant of the goals of each individual program and how well they mesh with such an intervention.
**Summary**

College freshmen are particularly at risk for engaging in heavy alcohol use, as this transitional period is characterized by reduced parental control, increased personal autonomy (Baer, Kivlahan, & Marlatt, 1995), and new social contextual factors (e.g., new friendships, new living arrangements) (Montemayor & Flannery, 1991; Perkins & Wechsler, 1996). Additionally, longitudinal research indicates that drinking rates increase when adolescents leave their parents’ homes and move to dormitories or apartments (Baer et al., 1995) and that this increase occurs early in college (Leibsohn, 1994). This initial increase in use may increase the likelihood of future problem drinking, as it has been supported that first-year alcohol use and abuse invariably continues in the second year (Wechsler, Isaac, Grodstein, & Sellers, 1994). Despite the increased risk of heavy drinking during the freshman year of college, heavy alcohol use or abuse may be learned not in college, but in high school (Wechsler et al., 1994). It is widely recognized that freshmen drinking during the transitional period significantly increases vulnerability to health risk behaviors and consequences (Leibsohn 1994).

(Berkley-Patton et al., 2003, pp. 25-26)

Social norms interventions, specifically targeted social norms interventions, have been shown to be effective in changing students’ attitudes about alcohol use, as well as decreasing reported alcohol use (Barnett & et al., 1996; Berkley-Patton et al., 2003; Far & Miller, 2003; Peeler et al., 2000; Schroeder & Prentice, 1998; Steffian, 1999).

Wardwell (1999) demonstrated that outdoor orientation programs, even without a specific social norms intervention, have the potential to reduce incoming students pluralistic ignorance about alcohol use. Schroeder and Prentice (1998) were able to train orientation leaders in a brief three-hour training to implement a one-hour targeted social norms intervention that led to decreased alcohol use by first-year students four to six months after the intervention. As Schroeder and Prentice indicated, incoming students may be optimal candidates for social norms interventions, because they have not yet been exposed to the (exaggerated) attitudes of on-campus students, and have not yet established their own drinking identities on campus. The outdoor orientation setting, off-campus, away from campus norms, and in an environment conducive to establishing
positive, healthy group norms could be an ideal setting for conveying social norms information via highly trusted, well trained, peer leaders.

Gass et al. (2003) found outdoor orientation programs can have lasting positive effects on students, and are implemented at a time when students are especially susceptible to change (Gass, Garvey, & Sugerman, 2003). This suggests that establishing healthy, responsible drinking norms during these programs could have a lasting effect on students throughout their time in college.

The current study examined the effects of a targeted social norms intervention intended to reduce pluralistic ignorance of alcohol use and attitudes in incoming students implemented during an outdoor orientation program. The intervention was operationalized as a training for outdoor orientation program leaders in social norms theory and the accurate alcohol use norms of students at the college. It was hypothesized that providing leaders with accurate social norms information would allow them to pass on more accurate and responsible information to incoming students. Since leaders are often seen as trusted friends and mentors by incoming students, it was hoped these norms would be especially salient and credible to incoming students, and therefore have a significant impact on their attitudes about and use of alcohol during the first semester of college. This study sought to bridge the disciplines of outdoor adventure and social norms by introducing a targeted social norms intervention in a novel setting. It was hoped that outdoor orientation programs could come to be seen as an effective tool for dealing with alcohol issues on college campuses, adding value to these types of programs. In addition, this study adds to the social norms literature by exploring new settings and ways of delivering social norms information to students.
CHAPTER III

RESEARCH METHODOLOGY

Overview

The objective of this study was to examine the effects of a social norms training program for outdoor orientation program leaders on the normative beliefs of incoming students regarding alcohol. In addition, this study looked for changes in self-reported alcohol use and attitudes after one semester of college. Wardwell (1999) found that the Princeton University outdoor orientation program increased the accuracy of students’ normative beliefs about alcohol use. Several studies have demonstrated perceptions of drinking norms at one time predict drinking behavior at some later time (Botvin et al., 2001; D'Amico et al., 2001; Prentice & Miller, 1993; Sher et al., 2001; Steffian, 1999).

The current study used a quasi-experimental, repeated measures, non-equivalent groups design. Three groups (OOP, OOP+, and NPO) were measured across four times; the start of pre-orientation (Time 1), the start of orientation (Time 2), the end of orientation (Time 3), and the end of the first semester (Time 4). Students were assessed on their own alcohol use and attitudes, as well as their perceptions of peers’ use and attitudes. The survey instrument was composed of questions from established alcohol measures. Two of the groups (OOP and OOP+) participated in an outdoor orientation program. The leaders of the experimental (OOP+) groups received additional social norms alcohol awareness training. Program participation (i.e. OOP, OOP+, or NPO) was
the independent variable. After the outdoor orientation program all leaders completed a follow up survey to help assess the “dosage” of alcohol and social norms information discussed during the trips. All groups participated in the traditional on-campus orientation.

**Participants**

The participants in this study were the entering first-year class of 2013 at a small, private, liberal-arts college located in upstate New York that enrolls approximately 1,800 undergraduate students. At the start of the fall 2009 semester, the student-body was approximately 68% Caucasian, 8% Asian American or Pacific Islander, 5% Hispanic American, and 4% Black, non-Hispanic, 1% American Indian or Native Alaskan, 5% of students were non-resident aliens, and 10% were race/ethnicity unknown. The average student was 20 years old; the average first-year student was 18. The average age of students who participated in this study was 18.

In order to address the research questions of this study, three subgroups within the first-year class were examined. The experimental group (OOP+) included approximately half of the students who participated in the college’s outdoor orientation program. These students participated in trips that were randomly assigned into the experimental condition. The trip leaders from the experimental group received additional training on pluralistic ignorance, social norms theory, and information about the normative alcohol use patterns of first year students. The other half of the outdoor orientation participants, the control group (OOP), participated in the “standard” outdoor orientation program. The leaders of these trips received no additional training. Students from these groups
participated in trips that were randomly assigned into the control condition. The comparison group (NPO) was comprised of students who do not participate in a pre-orientation program. The NPO students arrived on campus on the first day of the traditional on-campus orientation program. Approximately 50 students from the entering class participated in other pre-orientation programs, including a service program and an academic prep program. Data collected from these students were identified and excluded from analysis. This decision was made because the researcher did not have any knowledge of, or influence over, the amount of alcohol and social norms information the participants in these programs would receive.

**Intervention**

The outdoor orientation program examined in this study was an eight-day program that took place the week before regular, on-campus orientation. There were 228 first-year students participating in the program on 27 different trips, all of which took place in New York’s Adirondack State Park. There were a variety of trip types including: backpacking, canoeing, combo (backpacking/canoeing), sea kayaking, triple-combo (backpacking, canoeing, and kayaking), climbing, multi-activity base-camp, and community service. The final two days of each trip took place at a challenge course, where five to six trips congregated for a final high-ropes experience and campfire. The stated goals of the program (2008, emphasis added) were:

- To have a *positive transition into college*, with good friends and helpful, experienced leaders
- To be safe, yet challenged mentally as well as physically
• To find out how you work in a group of college students
• To deal with people who might be different from you
• To learn about college, your peers, yourself, and how this all fits together
• To promote self-confidence and acceptance of responsibility for behavior and choices
• To learn wilderness skills and appreciate the great outdoors
• Have fun!

Changing misperceptions of social norms was not a stated goals of this program, nor is it a stated goal of most outdoor orientation programs in the United States (Galloway, 2000; O'Keefe, 1989). However, it can be argued that the stated goals, emphasized above in italics, are complimentary to the goals of a social norms intervention. For example, the programs goals of having a positive transition to college, dealing with people who might be different from you, learning about college and your peers, and promoting responsibility are all goals that compliment the aims of a social norms intervention designed to correct misperceptions about alcohol use.

The trip leaders were primarily upper-class students who had been through extensive training in challenge course facilitation, wilderness living and travel, leadership, and group management. In addition to student leaders, there were also alumni leaders, faculty and staff leaders, and one leader not otherwise associated with the college who served as a climbing guide.

In addition to the standard training in which all student leaders participated, the leaders of the OOP+ groups participated in a three-hour training on alcohol awareness and social norms theory. The training included the following elements (see APPENDIX A for a complete outline and training materials):
• Presentation of training objectives

• An agreement between the researcher and the leaders on what they “are” and “are not” being asked to do

• Definition of “a drink”

• An introduction to social norms theory, pluralistic ignorance, and effects on behavior

• Data on drinking norms from the college

• Data of drinking norms from first years at the college

• What if - A breakdown of drinking behaviors found at the college based on a group of 100 people

• Alcohol awareness - Basic definitions of alcohol related terms to establish a common vocabulary, as well as medical issues related to alcohol use and overuse

• A review of college policies and resources related to alcohol

• Who’s on the trail with you? – An activity designed to highlight the wide variety of alcohol attitudes and experiences possessed by incoming students.

• Reactive discussions – How to deal with tough/inappropriate questions related to alcohol

• Proactive discussions - How to address alcohol related issues proactively, including “You may have heard that” – an activity based on the “fears in a hat” activity. Also how to use the full value contract and challenge by choice agreements to facilitate these conversations

Prior to leaving on their trips, the leaders of the OOP+ trips were informed they would be asked to complete a brief survey at the end of the program (APPENDIX B) to assess what, if any, “dose” of social norms intervention their participants received. It was
hoped this would encourage leaders to use their training to interact with incoming students about responsible alcohol use, pluralistic ignorance, and social norms, and allow the researcher to assess whether the leader training resulted in the dissemination of social norms information. The OOP group also completed this end of program survey, however they were not informed in advance in order to limit potential social threats such as compensatory rivalry. This information about the treatment fidelity, the extent to which leaders who received training engaged students in discussions about alcohol norms, was helpful in interpreting the effects the additional leader training had on incoming students.

**Instrumentation**

The survey instrument used in this study (APPENDIX B) measured both descriptive and injunctive norms of alcohol use. Descriptive norms were measured in two ways. One question assessed the quantity of students’ own alcohol use, along with their beliefs about the quantity of other students’ alcohol use. A second question assessed the frequency of students’ own alcohol use, along with their beliefs about the frequency of other students’ alcohol use (see Table 4). Injunctive norms were assessed using a four-items measure based on Baer (1994) and Lee et al.’s (2007) social approval measure. Students were asked to respond to the four items in terms of their own level of approval for alcohol use and related behaviors, as well as their perceptions of the approval of students in general.

Questions about frequency (own, and students in general) asked students to give the number of drinks consumed, on average, at parties or bars. Students responded on a scale from “0” to “15+” drinks. Questions about frequency (own and students in general)
asked students how often alcohol was typically consumed. Students responded on a scale from “never” to “every day.” Table 4 lists all possible responses for frequency.

Table 4
Frequency of Alcohol Use - Categories

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>never consume alcohol</td>
</tr>
<tr>
<td>1</td>
<td>one to two times/year</td>
</tr>
<tr>
<td>2</td>
<td>six times/year</td>
</tr>
<tr>
<td>3</td>
<td>once/month</td>
</tr>
<tr>
<td>4</td>
<td>twice/month</td>
</tr>
<tr>
<td>5</td>
<td>once/week</td>
</tr>
<tr>
<td>6</td>
<td>three times/week</td>
</tr>
<tr>
<td>7</td>
<td>five times/week</td>
</tr>
<tr>
<td>8</td>
<td>every day</td>
</tr>
</tbody>
</table>

The descriptive norm questions were from the CORE Survey of Alcohol and Other Drug Norms (CSAODN, used with permission from the CORE Institute, see APPENDIX C). The CSAODN is a commonly used instrument on many college campuses, and the questions used in this study come from items in the survey with good reliability ($\alpha = .872$ and $\alpha = .935$ for the two questions used). The vast majority of social norms research has relied on self-reported measures of alcohol use. Most researchers acknowledge the validity of these self-reports is limited by participants’ ability to accurately remember their past drinking behavior, and/or the social stigma of heavy drinking which may lead to self-reports that are socially desirable at the expense of being accurate (Embree & Whitehead, 1993). However, these observations have not dissuaded the use of self-reports by social norms researchers, most of whom agree with Perkins & Craig (2006, p. 888) who assert, “self-report survey data are generally reliable and valid...especially if the data are collected anonymously.” Midanik (1988) reviewed the literature on self-reported alcohol measures and concluded, “the validity of self-reports is not an either/or phenomenon” (p. 1027), rather he found different instruments were more or less successful at eliciting accurate responses depending on the type of question, how it was asked, who was asking, and who was answering. Questions that aided in recall, and minimized any sense of social stigma were found to be the most valid. The current study
used a multi-group, longitudinal design to assess change over time, and the relative change between the groups. In describing the use of self-reports in this type of research, Embree & Whitehead concluded (1993, p. 341):

> When time trends are being assessed and the focus of the study is toward isolating change over time, the reliability of a measure is more critical than its validity. The question's ability to assess "actual" levels of consumption is not as important in this case, since relative change is what is being measured. Similarly, a question that is highly reliable can be useful for assessing relative differences in various populations of drinkers. The key is the word "relative," since the absolute differences between time points or different populations are not an issue when this kind of assessment is being made.

Injunctive norms were measured using Lee et al.’s (2007) adaptation of Baer’s (1994) four-item measure of social approval. Baer’s measure assessed both approval of drinking frequency, as well as approval of drinking related behaviors. Specifically, the four questions used in this study asked students to rate approval for "drinking alcohol every weekend," "drinking alcohol daily," "driving a car after drinking," and "drinking enough alcohol to pass out." Students rated their approval for each item on a seven-item Likert-type scale ranging from one indicating “strong disapproval” to seven indicating “strong approval.” Students’ responses to these four items were averaged to create a single measure of social approval with a possible range from one to seven. A score less than four indicated general disapproval of alcohol use (mild, moderate, or strong), a score above four indicated general approval of alcohol use (mild, moderate, or strong), and a score of four indicated students “didn’t care” about alcohol use. Lee et al. adapted Baer’s measure by creating two questions, one measuring an individual’s own approval, and another measuring the individual’s perceptions of their friends’ approval. For the current study, “friends” was replaced with “students in general” since it would have been unclear who participants, making the transition from high school to college, were describing in
response to the question about “friends.” Lee et al. reported reliabilities of $\alpha=.67$ for own approval, and $\alpha=.76$ for friends approval. In the current study, $\alpha=.66$ for own social approval, and $\alpha=.61$ for students in general. These items were used with the permission of doctors Baer and Lee (see APPENDIX C). Neither Lee et al. nor Baer reported any information on the validity of these four items for measuring injunctive drinking norms.

In addition to the questions about norms, participants were asked two control questions to better understand their pre-disposition to use alcohol. Specifically, participants were asked about their intention to join a Greek society, and at what age they first used alcohol. Intention to join a Greek organizations was measured because fraternity and sorority members typically drink more than their non-Greek peers (Dorsey, Sherer, & Real, 1999; Grenier, Gorskey, & Folse, 1998). In addition, Perkins, Haines, & Rice (2005) found Greek involvement was a significant predictor of the number of drinks consumed the last time a student “partied/socialized.” Similarly, Rimal & Real (2003, 2005) found that age at first alcohol consumption was a significant predictor of alcohol consumption and intention to consume alcohol. Chi-square analyses were used to determine if the outdoor orientation or no pre-orientation groups differed on any of these predictor variables.

Participants were asked three demographic questions (age, sex, and ethnicity). Two other questions assessed whether students participated in a pre-orientation program, and if so, which one. Finally, students were asked to generate a unique and confidential identification number (day of the month on which they were born plus the last four digits of their student ID number) for the purposes of matching responses longitudinally.
Procedures

The current study used a quasi-experimental, repeated measures, non-equivalent groups design. Within this quasi-experimental design, a two-group randomized design was used to assess the impact of the leader training. Groups were stratified by number of participants (to ensure equal sample sizes) and then randomly assigned to either the OOP or OOP+ condition. A total of three groups were measured across four times. All groups participated in the on-campus orientation. Two of the groups participated in the outdoor orientation program. Leaders from half of those groups (OOP+) received additional social norms and alcohol norms training.

<table>
<thead>
<tr>
<th>OOP+</th>
<th>N</th>
<th>R</th>
<th>O1</th>
<th>X1+</th>
<th>O2</th>
<th>X2</th>
<th>O3</th>
<th>O4</th>
</tr>
</thead>
<tbody>
<tr>
<td>OOP</td>
<td>N</td>
<td>R</td>
<td>O1</td>
<td>X1</td>
<td>O2</td>
<td>X2</td>
<td>O3</td>
<td>O4</td>
</tr>
<tr>
<td>NPO</td>
<td>N</td>
<td></td>
<td></td>
<td>O2</td>
<td>X2</td>
<td>O3</td>
<td>O4</td>
<td></td>
</tr>
</tbody>
</table>

O1 – first day of outdoor orientation  X1+ – outdoor orientation with social norms intervention
O2 – first day of orientation          X1– outdoor orientation
O3 – last day of orientation          X2– on-campus orientation
O4 – end of first semester (early December)

Consent

The Institutional Review Boards at the University of New Hampshire and Hamilton College reviewed and approved this study. In addition, the support and approval of several members of the Hamilton College administration was obtained, including: Dr. Nancy Thompson, Dean of Students; Andrew Jillings M.S., Director of Outdoor Leadership; and Dr. Robert Kazin, Director of Counseling and Psychological Services. All students were asked to complete consent forms at the time of their first survey administration. Participants were free to choose whether or not to participate in the study, and free to withdraw from the study at any time without consequence.
With the help of the Admissions Department, it was determined there would be 65 first-year students under 18 at the start of the study. The parents/guardians of this group of students were contacted over the summer prior to the study. Parents/guardians received a description of the study, along with a passive consent form. The passive consent form asked parents or guardians to reply only if they wished to withdraw their son or daughter from the study. Passive consent was used in this situation because the study posed relatively little risk to participants (regardless of their age), and because the difference between minors and adults in this study was a matter of days, weeks, or at most a few months. Once on campus, all participants completed the same consent form. Students whose parents/guardians opted them out \((n=2)\) were identified and did not receive the survey.

To further protect the confidentiality of all participants, a signed letter from the Dean of Students at Hamilton College was obtained supporting this research and guaranteeing no representative from the college would request any identifying information from this study (see APPENDIX D).

**Survey Procedures**

Over the course of the study, the outdoor orientation program participants were asked to complete the survey four times, while the comparison participants were asked to complete the survey three times. The outdoor orientation groups (OOP and OOP+) completed pre outdoor orientation (Time 1), pre on-campus orientation (Time 2), post orientation (Time 3), and end of first semester (Time 4) surveys. The NPO group completed surveys at pre-orientation (Time 2) post-orientation (Time 3), and end of first semester (Time 4). For the NPO group, Time 2 was their pre-test, since it was their first
day on campus. The temporal difference between the pretests was appropriate because while eight days elapsed from Time 1 to Time 2, all groups completed their pretest of their first day of college. Surveys from Times 1, 2, and 3 were used to assess the impact of the outdoor orientation (with and without leader training) and orientation programs on students’ perceptions of alcohol norms as well as any interaction between the programs. Data from Time 4 was used to assess students’ own alcohol use and attitudes at the end of one semester of college as well as their perceptions of other students.

Data was not collected from the comparison group at Time 1 because their alcohol use and attitudes at that time were pre-college, and therefore not related to the current study. In addition, their perceptions of other students’ use and attitudes were not being affected by any of the social norms influences related to this study. However, since the OOP and OOP+ groups took the survey one more time than the NPO group, the potential for a test effect must be considered. A test effect seems unlikely since the survey measured attitudes and perceptions, making it unlikely students could “improve” simply by taking the survey multiple times. On the other hand, it is possible participants experienced a priming-effect such that any changes observed might have been influenced by an earlier administration of the survey. Since the OOP and OOP+ groups took the survey one additional time, this priming-effect could have been greater for these groups. This limitation must be considered in any interpretation of the findings.

The researcher administered the first two surveys himself. Students heard a brief message about the nature of the study and how their confidentiality would be maintained. The researcher also emphasized that participation was voluntary and was in no way tied to their standing at the college. Student orientation leaders, trained by the researcher,
conducted the third administration. The fourth and final survey administration was administered online via the Psychdata.com website (see APPENDIX for Psychdata.com’s privacy and security policies). The survey was available online for a period of two weeks at the start of December. Participants were contacted via email at the start of the survey time and then received email reminders over the two weeks the survey was available.

Cranford et al. (2008) conducted the first and only study on reasons for non-response in a web-based survey of alcohol use. They found students who reported lower rates of heavy-episodic drinking (i.e. binge drinking) were less likely to complete the web-based survey. They also found that non-respondents reported significantly more time spent preparing for class than did respondents. They concluded the prevalence of heavy episodic drinking may be over reported in web based surveys due to this difference. Given the logistical challenges of sampling a large group of students at the end of the semester (when students tend to be very busy and under high amounts of stress) using a web based survey was seen as the least intrusive method and the most likely technique for obtaining a high response rate. Nonetheless, the findings of Cranford et al. should be considered in interpreting any results from the web-based surveys.

Data Analysis

All data analyses were conducted using the Statistical Package for the Social Sciences 17 (SPSS) software. Survey responses were matched longitudinally using the confidential identification code self-generated by the participants. When one-item was missing from a multi-item scale, the missing item was replaced using the mean for that
item. In all other instances, cases were excluded from analysis if data were missing.

Attrition analyses were conducted to determine if attrition was related to quantity of alcohol use, frequency of alcohol use, age at first drink, or sex. Responses from participants in the alternate pre-orientation programs were identified and removed from the data set prior to analysis.

**Preliminary Analysis**

Whenever a nonequivalent groups design is used there is the potential for selection threats to internal validity. In this study, several variables were examined to investigate how similar (or dissimilar) the OOP participants were from the NPO students on their first day on campus. The variables examined were: age, sex, ethnicity, intention to join a Greek organization, age at which alcohol was first consumed, own alcohol use quantity, frequency, and social approval, perceptions of students’ alcohol use quantity, frequency and approval, and self-other-differences in alcohol use quantity, frequency, and social approval. Differences between the OOP+ and OOP conditions were controlled by stratified random assignment of groups into those two conditions.

**Descriptive Norms**

Alcohol use was measured by two questions, one for quantity, and a second for frequency. Quantity was measured by students’ responses to the question “how many alcoholic drinks, on average, do you think each of the following students typically consumes at parties and bars? (A drink is a bottle of beer, a glass of wine, a wine cooler, a shot glass of liquor, or a mixed drink.)” Students answered this question for the reference groups: “self” and “students in general.” Frequency was measured by students’ responses to the question “How often do you think students in each of the following
categories typically consume alcohol (including beer, wine, liquor, wine coolers, and mixed drinks)?” Students answered this question for the reference groups: “self” and “students in general.”

**Injunctive Norms**

Injunctive norms were measured using Lee et al.’s four-item measure of social approval. Students responded to the four social approval items for their own approval and approval of students in general. Social approval scores were calculated for each reference group by taking the average of the four-items in the scale.

**Pluralistic Ignorance**

Pluralistic ignorance, operationalized as the self-other-difference between an individuals’ self-reported behavior or attitude and their perceptions of other students’ behaviors or attitudes, was calculated for each participant. Self-other-differences were calculated for quantity of alcohol use (students-own), frequency of alcohol use (students-own), approval of alcohol use (students-own). Pluralistic ignorance was always calculated by subtracting own scores from others’ scores such that positive pluralistic ignorance indicated an individual thought other students drank more or were more approving of alcohol use, and a negative score indicated an individual thought they drank more or were more approving of alcohol use.

**Change Scores**

Change scores for own quantity, frequency, and social approval of alcohol use, as well as students’ quantity, frequency, and social approval of alcohol use, and pluralistic ignorance of quantity, frequency, and social approval of alcohol use were all calculated. Change scores were calculated for Times 1-2, 2-3, 1-3, and 1-4. Change scores were only
calculated for matched pairs and always by subtracting the earlier time from the later, such that a positive change score indicated an increase over time, and a negative change score indicated a decrease over time.

**Analysis of Questions**

For each of the seven research questions, a specific statistical analysis was conducted to determine results.

Question 1a) Does participation in an outdoor orientation program (Time 1 – Time 2) affect participants' pluralistic ignorance about alcohol use and attitudes? 1b) Does the addition of social norms training for the outdoor orientation program leaders have an effect on participants' pluralistic ignorance?

1a) Paired samples *t*-tests were conducted assess changes in own alcohol use and attitudes, perceptions of other students' use and attitudes, and pluralistic ignorance from Time 1 to Time 2 for the experimental (OOP+) and control (OOP) groups. 1b) Independent samples *t*-tests were conducted the two groups at Time 2, and to compare the change scores of each group.

Question 2a) Does participation in the traditional on-campus orientation program (Time 2 – Time 3) affect students' pluralistic ignorance about alcohol use and attitudes? 2b) Is there a different effect for students from the OOP or OOP+ groups?

2a) Paired samples *t*-tests were conducted to assess changes in own alcohol use and attitudes, perceptions of other students' use and attitudes, and pluralistic ignorance from Time 2 to Time 3 for the OOP, OOP+, and NPO groups. 2b) One-way between-
groups analysis of variance was conducted to compare the groups change scores and Time 3 scores

Question 3a) Is there an interaction between participation in outdoor orientation (in the OOP or OOP+ group), and participation in the traditional on-campus orientation (Time 1 – Time 3) that affects students’ pluralistic ignorance about alcohol use and attitudes? 3b) How does this interaction compare to participation in only on-campus orientation?

3a) Paired samples t-tests were conducted to assess changes in own alcohol use and attitudes, perceptions of other students’ use and attitudes, and pluralistic ignorance from Time 1 to Time 3 (but only for those students who also completed surveys at Time 2) for the experimental group and the control group. Changes in the OOP and OOP+ group from Time 1 to 3 were compared to one another as well as to changes in the NPO group from Time 2 to 3. 3b) One-way between-groups analysis of variance was used to compare the change scores and Time 3 scores between the three groups.

Question 4) After one semester of college (Time 4), do students who participated in the outdoor orientation program (either in the OOP or OOP+ group) report different alcohol use or attitudes than students who did not participate in any pre-orientation (NPO group)?

4) Paired samples t-tests were conducted to assess changes in own alcohol use and attitudes, perceptions of other students’ use and attitudes, and pluralistic ignorance from pre-test to end of first semester for all three groups. One-way between-groups analysis of variance was used to compare change scores and end of first semester scores between all three groups.
This chapter reports the results of the data analysis from this study. Response rates and data cleaning procedures are described. The seven research questions were explored in detail using the results from statistical analyses generated with the Statistical Package for the Social Sciences 17 software package.

The results reported are for the following seven research questions:

1a. Did participation in an outdoor orientation program (Time 1 – Time 2) affect participants’ pluralistic ignorance about alcohol use and attitudes?

1b. Did the addition of social norms training for the outdoor orientation program leaders have an effect on participants’ pluralistic ignorance?

2a. Did participation in the traditional on-campus orientation program (Time 2 – Time 3) affect students’ pluralistic ignorance about alcohol use and attitudes?

2b. Was there a different effect for students from the OOP or OOP+ groups?

3a. Was there an interaction between participation in outdoor orientation (in the OOP or OOP+ group), and participation in the traditional on-campus orientation (Time 1 – Time 3) that affected students’ pluralistic ignorance about alcohol use and attitudes?

3b. How did this interaction compare to participation in only on-campus orientation?

4. After one semester of college (Time 4), did students who participated in the outdoor orientation program (either in the OOP or OOP+ group) report different alcohol use or
attitudes than students who did not participate in any pre-orientation (NPO group)?

**Survey participation**

A total of 1106 surveys were completed by first-year students at a small, liberal-arts college in upstate New York. The survey asked students about their own alcohol use, attitudes, and perceptions of the alcohol use and attitudes of their peers. Surveys were administered at four separate times: the start of the outdoor orientation program (Time 1), the start of the on-campus orientation program (Time 2), the end of the on-campus orientation program (Time 3), and the end of one semester of college (Time 4). Respondents were classified into one of three experimental groups. The “NPO” or comparison group included students who did not participate in any pre-orientation program, the “OOP” or control group included students who participated in the outdoor orientation program whose leaders did not receive social norms training, and the “OOP+” or experimental group included students who participated in the outdoor orientation program whose leaders received social norms training. A fourth group of students ($N = 63$) participated in alternate pre-orientation programs were removed because the researcher had no control over the amount of social norms information these students received.

**Data Cleaning**

All data were inspected for the presence of data entry errors. Values falling outside the expected range were re-checked and replaced with correct values. One measure, social approval, was composed of four-items. In cases where a single item was
missing, the missing value was replaced with the mean of the item scale. Missing data were replaced 15 times. Data from one transgender individual were removed since no meaningful statistical analyses could be performed.

**Demographic Information**

Table 5 includes summaries of the demographic information provided by students in the no pre-orientation (NPO) and combined outdoor orientation program (OOP) groups. Both groups had approximately even gender distributions, though the NPO group had more males (55.4%), while the OOP-combined group had more females (58.4%). Both groups were predominantly white/Caucasian, which was consistent with the college in general. Students in both groups were most likely to have had their first alcoholic drink between the ages of 14 and 17, though the NPO group had a slightly higher percentage of students who started drinking between the ages of 14 and 15. The combined OOP group had a slightly higher percentage of non-drinkers (14.9%) compared to the NPO group (10.9%). A majority of students in both groups said they did not intend to join a Greek organization, while roughly a third of each group were undecided on their first day of college. The mean age in both groups was roughly 18, and both groups had a range from 17 to 20 years of age.
<table>
<thead>
<tr>
<th>Variable</th>
<th>NPO</th>
<th>OOP- Combined</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>( n = 184 )</td>
<td>( n = 202 )</td>
</tr>
<tr>
<td>55.4%</td>
<td>41.6%</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>( n = 184 )</td>
<td>( n = 202 )</td>
</tr>
<tr>
<td>44.6%</td>
<td>58.4%</td>
<td></td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asian, Native Hawaiian, Pacific Islander</td>
<td>9.8%</td>
<td>5.9%</td>
</tr>
<tr>
<td>Black or African American</td>
<td>2.2%</td>
<td>1.0%</td>
</tr>
<tr>
<td>Hispanic or Latino</td>
<td>1.6%</td>
<td>1.5%</td>
</tr>
<tr>
<td>White/Caucasian</td>
<td>82.1%</td>
<td>85.1%</td>
</tr>
<tr>
<td>Mixed ethnicity</td>
<td>4.3%</td>
<td>6.4%</td>
</tr>
<tr>
<td>Age at First Drink</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No use</td>
<td>( n = 184 )</td>
<td>( n = 201 )</td>
</tr>
<tr>
<td>10.9%</td>
<td>14.9%</td>
<td></td>
</tr>
<tr>
<td>Under 10</td>
<td>4.9%</td>
<td>4.5%</td>
</tr>
<tr>
<td>10-11</td>
<td>2.7%</td>
<td>2.0%</td>
</tr>
<tr>
<td>12-13</td>
<td>10.9%</td>
<td>10.9%</td>
</tr>
<tr>
<td>14-15</td>
<td>35.9%</td>
<td>28.9%</td>
</tr>
<tr>
<td>16-17</td>
<td>29.9%</td>
<td>32.8%</td>
</tr>
<tr>
<td>18-20</td>
<td>4.9%</td>
<td>6.0%</td>
</tr>
<tr>
<td>Plan to Join the Greek System</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>( n = 180 )</td>
<td>( n = 195 )</td>
</tr>
<tr>
<td>55.6%</td>
<td>53.3%</td>
<td></td>
</tr>
<tr>
<td>Don’t know</td>
<td>32.8%</td>
<td>37.4%</td>
</tr>
<tr>
<td>Yes</td>
<td>11.7%</td>
<td>9.2%</td>
</tr>
<tr>
<td>Age</td>
<td>( n = 183 )</td>
<td>( n = 198 )</td>
</tr>
<tr>
<td>( M = 17.98 )</td>
<td>( M = 18.02 )</td>
<td></td>
</tr>
<tr>
<td>( SD = 0.57 )</td>
<td>( SD = 0.49 )</td>
<td></td>
</tr>
<tr>
<td>Range = 17-20</td>
<td>Range = 17-20</td>
<td></td>
</tr>
</tbody>
</table>

Chi-squares analyses were performed on the five demographic variables to determine if any particular group was more likely to participate in the program. Table 6 includes the statistically significant results. Chi-square analyses revealed women (59.0%) were significantly more likely to participate in the outdoor orientation program than men (45.2%), \( \chi^2 (1, n = 386) = 6.854, p = .009, \phi = .138 \). No other significant differences
were found, and the groups were similar in terms of their distribution of ethnicities, age at first drink, likelihood to join a Greek organization, and age.

Table 6

* Significant Demographic Differences between NPO and OOP-combined

<table>
<thead>
<tr>
<th>Variable</th>
<th>NPO %</th>
<th>OOP- Combined %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male (n = 186)</td>
<td>54.8%</td>
<td>45.2%</td>
</tr>
<tr>
<td>Female (n = 200)</td>
<td>41.0%</td>
<td>59.0%</td>
</tr>
</tbody>
</table>

* $\chi^2 = 6.854, df = 1, p = .009, \phi = .138$

**Alcohol Use and Attitudes at Pretest**

This section provides descriptive statistics at pre-test for the NPO and combined OOP groups on the nine dependent variables examined in this study: own quantity, frequency, and social approval; perceptions of students' quantity, frequency, and social approval; and quantity, frequency, and social approval self-other-differences. Table 7 provides the means and standard deviations for all nine variables. In total, 401 students completed a pre-test, representing 86% of the incoming class.

Students reported wide variations in alcohol use, with quantities ranging from 0-14 drinks per occasion, and frequencies ranging from zero (never consume alcohol) to eight (consume alcohol every day - see Chapter 3, Table 4 for a complete explanation of frequency). On average, students in the NPO group reported they consumed 4.63 drinks per occasion, while the combined OOP students reported consuming 3.56 drinks per occasion. An independent samples t-test found this to be a statistically significant difference ($t (380.2) = 3.26, p = .001$). The effect size of the difference in the mean ($mean_{diff} = 1.07$) was small ($\eta^2 = .03$) according to guidelines established by Cohen for interpreting effect sizes for t-tests (1988, pp. 284-287). A small effect is around .01 - .05,
a moderate effect size ranges from .06 - .13, and a large effect size is .14 and greater. Students in both groups reported, on average, consuming alcohol between one and two times per month. The NPO group reported a marginally higher frequency (3.45) than the combined OOP group (3.26), and the difference was not significant. Social approval was measured by averaging students’ level of approval for four behaviors. Responses were given on a seven-point Likert-type scale where one represented “strong disapproval” and seven “strong approval.” On average, students in both groups rated themselves as mildly disapproving to not-caring about the four behaviors described in the measure: drinking alcohol every weekend, drinking alcohol daily, driving a car after drinking, and drinking enough to pass out. Although the NPO group’s mean approval (3.45) was slightly higher than the combined OOP group (mean approval = 3.26), there was no significant difference.

Perceptions of other students’ alcohol use also varied widely. Students in the NPO group believed other students consumed between 2 and 15+ drinks per occasion, and that on average other students consumed 5.69 drinks per occasion. In the combined OOP group, students believed their peers consumed between 1 and 13 drinks per occasion, and 5.32 drinks on average. Perceptions of other students’ frequency of alcohol use were similar, with both groups believing other students consumed alcohol approximately one time per week, on average. Perceptions of other students’ social approval were also similar between the two groups, with both groups believing other students “wouldn’t care” about the alcohol related behaviors described. Independent samples t-tests revealed no significant differences between the two groups’ perceptions of other students’ alcohol use and attitudes.
Finally, pluralistic ignorance was conceptualized as the difference between students’ self-reports and their perceptions of other students. This self-other difference was calculated by subtracting students’ own scores from their perceptions of other students’ scores, and reporting the difference. For example, if a student reported he consumed four drinks per occasion, and reported other students consumed six drinks per occasion, his self-other difference would be: 6 - 4 = 2 drinks per occasion. A positive self-other-difference indicated a student believed others used alcohol more and/or were more permissive of alcohol use, while a negative score indicated a student believed he used alcohol more or was more permissive. Quantity self-other difference was smaller for the NPO group (1.08) than the combined OOP group (1.76), indicating students in the NPO group believed they were more similar to other students than students in the combined OOP group. An independent samples t-test indicated this was a significant difference (t (351.9) = 2.37, p = .018) The magnitude of the differences in the means (mean diff = 0.68) was small (eta² = .01). Students in the combined OOP group also had larger average self-other differences in frequency, 1.81 compared to 1.49 in the NPO group, and in social approval, .59 compared to .53. However, neither of these two differences was significant. It is worthwhile to note that while there were significant differences in both own quantity and quantity self-other difference, self-other difference is dependent on own quantity, therefore these two findings are, in some respects, the same.
Table 7

*Own Alcohol Use and Attitudes, Perceptions of Other Students, and Self-Other Differences at Pretest - by Group*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Min</th>
<th>Max</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Own Quantity</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NPO</td>
<td>0</td>
<td>13</td>
<td>4.63</td>
<td>3.53</td>
</tr>
<tr>
<td>OOP - combined</td>
<td>0</td>
<td>14</td>
<td>3.56</td>
<td>2.10</td>
</tr>
<tr>
<td><strong>Own Frequency</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NPO</td>
<td>0</td>
<td>8</td>
<td>3.45</td>
<td>2.21</td>
</tr>
<tr>
<td>OOP - combined</td>
<td>0</td>
<td>8</td>
<td>3.26</td>
<td>2.10</td>
</tr>
<tr>
<td><strong>Own Social Approval</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NPO</td>
<td>1</td>
<td>7</td>
<td>2.44</td>
<td>1.07</td>
</tr>
<tr>
<td>OOP – combined (n = 204)</td>
<td>1</td>
<td>5.25</td>
<td>2.31</td>
<td>0.86</td>
</tr>
<tr>
<td><strong>Students’ quantity</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NPO (n = 191)</td>
<td>2</td>
<td>15</td>
<td>5.69</td>
<td>2.26</td>
</tr>
<tr>
<td>OOP - combined</td>
<td>1</td>
<td>13</td>
<td>5.32</td>
<td>2.35</td>
</tr>
<tr>
<td><strong>Students’ frequency</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NPO</td>
<td>1</td>
<td>8</td>
<td>4.94</td>
<td>1.07</td>
</tr>
<tr>
<td>OOP - combined</td>
<td>2</td>
<td>8</td>
<td>5.07</td>
<td>0.99</td>
</tr>
<tr>
<td><strong>Students’ Social Approval</strong></td>
<td></td>
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</tr>
<tr>
<td>NPO</td>
<td>1</td>
<td>7</td>
<td>2.97</td>
<td>0.97</td>
</tr>
<tr>
<td>OOP – combined (n = 205)</td>
<td>1</td>
<td>5.25</td>
<td>2.90</td>
<td>0.77</td>
</tr>
<tr>
<td><strong>Quantity Self-Other Difference</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NPO (n = 191)</td>
<td>-8</td>
<td>15</td>
<td>1.08</td>
<td>3.22</td>
</tr>
<tr>
<td>OOP – combined</td>
<td>-6</td>
<td>10</td>
<td>1.76</td>
<td>2.43</td>
</tr>
<tr>
<td><strong>Frequency Self-Other Difference</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NPO</td>
<td>-3</td>
<td>8</td>
<td>1.49</td>
<td>2.07</td>
</tr>
<tr>
<td>OOP – combined</td>
<td>-3</td>
<td>6</td>
<td>1.81</td>
<td>1.81</td>
</tr>
<tr>
<td><strong>Social Approval Self-Other Difference</strong></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NPO</td>
<td>-2.75</td>
<td>4</td>
<td>0.53</td>
<td>1.04</td>
</tr>
<tr>
<td>OOP – combined (n = 204)</td>
<td>-2.25</td>
<td>2.75</td>
<td>0.59</td>
<td>0.81</td>
</tr>
</tbody>
</table>

* *p < .05, ** p < .01
NPO: n = 193, OOP-combined: n = 208, unless otherwise noted
Effects of Outdoor Orientation Program and Social Norms Leader Training

Questions One a & b: Does participation in an outdoor orientation program (Time 1 – Time 2) affect participants’ pluralistic ignorance about alcohol use and attitudes? Does the addition of social norms training for the outdoor orientation program leaders have an effect on participants’ pluralistic ignorance?

Table 8 reports the pre and post-test means for the nine dependent variables, split by group, along with the change scores (i.e. mean difference) for each variable. In all, 178 (81.7%) respondents completed surveys at Time 1 and Time 2, out of a possible 218 students who participated in the outdoor orientation program. Paired samples t-tests were conducted to determine if participation in the outdoor orientation program affected the dependent variables. As indicated in Table 8, students in the experimental group (OOP+) did not experience significant changes in the nine dependent variables. Students in the control group (OOP) experienced increases in four dependent variables: own frequency, own social approval, perceptions of other students’ quantity, and perceptions of other students’ social approval.

Students in the OOP group significantly increased their own frequency from Time 1 \( (M = 2.88, SD = 2.19) \) to Time 2 \( (M = 3.22, SD = 2.26) \) \( t(92) = -3.42, p = .001 \) with a moderate effect size \( (\text{eta}^2 = .11) \). There was also an increase in own social approval from Time 1 \( (M = 2.18, SD = .82) \) to Time 2 \( (M = 2.39, SD = .85) \) \( t(91) = -3.44, p = .001 \) with a moderate effect size \( (\text{eta}^2 = .12) \).
Table 8
Mean Alcohol Use, Approval, and Self-Other Differences between Time 1 and Time 2

<table>
<thead>
<tr>
<th>Variable</th>
<th>Pre</th>
<th>Post</th>
<th>Mean diff (Mean - Change Scores)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Own Quantity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OOP</td>
<td>3.10</td>
<td>3.25</td>
<td>.15</td>
</tr>
<tr>
<td>OOP+</td>
<td>3.65</td>
<td>3.71</td>
<td>.06</td>
</tr>
<tr>
<td>Own Frequency</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OOP</td>
<td>2.88</td>
<td>3.22</td>
<td>.34**</td>
</tr>
<tr>
<td>OOP+</td>
<td>3.44</td>
<td>3.49</td>
<td>.05</td>
</tr>
<tr>
<td>Own Social Approval</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OOP (n = 92)</td>
<td>2.18</td>
<td>2.39</td>
<td>.21**</td>
</tr>
<tr>
<td>OOP+ (n = 82)</td>
<td>2.38</td>
<td>2.45</td>
<td>.07</td>
</tr>
<tr>
<td>Other/Student Quantity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OOP</td>
<td>4.96</td>
<td>5.40</td>
<td>.44**</td>
</tr>
<tr>
<td>OOP+</td>
<td>5.31</td>
<td>5.73</td>
<td>.42</td>
</tr>
<tr>
<td>Other/Student Frequency</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OOP</td>
<td>4.96</td>
<td>5.12</td>
<td>.16</td>
</tr>
<tr>
<td>OOP+</td>
<td>5.08</td>
<td>5.16</td>
<td>.08</td>
</tr>
<tr>
<td>Other/Student Social Approval</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OOP</td>
<td>2.77</td>
<td>3.07</td>
<td>.30***</td>
</tr>
<tr>
<td>OOP+ (n = 82)</td>
<td>2.92</td>
<td>3.08</td>
<td>.16</td>
</tr>
<tr>
<td>Quantity Self-Other Difference</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OOP</td>
<td>1.85</td>
<td>2.15</td>
<td>.30</td>
</tr>
<tr>
<td>OOP+</td>
<td>1.66</td>
<td>2.02</td>
<td>.36</td>
</tr>
<tr>
<td>Frequency Self-Other Difference</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OOP</td>
<td>2.08</td>
<td>1.90</td>
<td>-.18</td>
</tr>
<tr>
<td>OOP+</td>
<td>1.65</td>
<td>1.68</td>
<td>.03</td>
</tr>
<tr>
<td>Social Approval Self-Other Difference</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OOP (n = 92)</td>
<td>0.59</td>
<td>0.68</td>
<td>.09</td>
</tr>
<tr>
<td>OOP+ (n = 82)</td>
<td>0.54</td>
<td>0.63</td>
<td>-.09</td>
</tr>
</tbody>
</table>

*p < .05, **p < .01, ***p < .001
OOP: n = 93, OOP+: n = 85, unless otherwise noted
In addition to the increases in their own alcohol use, students in the OOP group also reported increases in their perceptions of other students’ alcohol use and attitudes. OOP participants’ perceptions of other students’ quantity increased from Time 1 ($M = 4.96, SD = 2.15$) to Time 2 ($M = 5.40, SD = 2.12$) $t (92) = -2.68, p = .009$ with a moderate effect size ($eta^2 = .07$). There was also an increase in perceptions of other students’ social approval, which increased from Time 1 ($M = 2.77, SD = 0.76$) to Time 2 ($M = 3.07, SD = 0.87$) $t (92) = -3.70, p < .001$ with a moderate effect size ($eta^2 = .13$). There were no significant changes for either group in any of the three self-other difference measures.

In order to assess the relative impact of the leader training on participants in the outdoor orientation program, independent samples $t$-tests were conducted to compare the change scores (differences between Time 2 and Time 1) and Time 2 scores between the OOP and OOP+ groups. No significant differences were found between the OOP and OOP+ groups at Time 2 for the nine dependent variables. A comparison of change scores indicated that the change in the OOP group’s frequency ($M = 0.34, SD = 0.94$) was significantly different from the OOP+ group ($M = 0.05, SD = 0.77$), $t (174.18) = 2.19, p = .03$ (two-tailed). The magnitude of the difference in the means was small ($eta^2 = .03$).

Attrition analyses were performed to determine if students who completed surveys at Time 2 ($n = 178$) were different from students who completed surveys at Time 1 ($N = 30$). Chi-square analyses were used to examine gender differences, and independent samples $t$-tests were used to compare own quantity, own frequency, and age at first drink. Chi-square analysis found no significant gender differences between the groups. An independent samples $t$-test found that in the control group (OOP) the students
who completed surveys at Time 2 reported significantly lower quantity of alcohol use \((M = 3.10, SD = 2.82)\) than students who only completed Time 1 \((M = 4.72, SD = 2.74)\) \((t(106) = 2.09, p = .039)\). There were no differences in the experimental (OOP+) group. This attrition threat should be considered when interpreting the results from Question One, especially results related to quantity of alcohol consumption.

Overall, participants in the OOP group reported significant increases in their own frequency, own social approval, perceptions of other students’ quantity and perceptions of other students’ social approval of alcohol use, while participants in the OOP+ group did not report any significant increases. However, only the increase in the OOP group’s own frequency was significantly different from the changes experienced by the OOP+ group. While the relative lack of difference between the experimental and control conditions within the outdoor orientation program suggested the treatment given to the OOP+ leaders had minimal impact, it was hypothesized that there may have been some carry-over or latency effects, and therefore the two groups were maintained as separate for subsequent analyses.

**Questions Two a & b:** Did participation in the traditional on-campus orientation program (Time 2 – Time 3) affect students’ pluralistic ignorance about alcohol use and attitudes? Was there a different effect for students from the OOP or OOP+ groups?

Table 9 reports the pre and post-test means for all nine of the dependent variables, split by group, along with the change scores (i.e. mean difference) for each variable. In all, 183 (46%) respondents completed surveys at Time 2 and three. Paired samples \(t\)-tests were conducted to determine if participation in the traditional on-campus orientation
Table 9
Alcohol Use, Approval, and Self Other Differences between Groups Time 2 to Time 3

<table>
<thead>
<tr>
<th>Variable</th>
<th>Pre Time2</th>
<th>Post Time3</th>
<th>Mean diff (Mean - Change Scores)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Own Quantity</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Own NPO</td>
<td>4.54</td>
<td>4.60</td>
<td>0.06</td>
</tr>
<tr>
<td>OOP</td>
<td>3.64</td>
<td>3.82</td>
<td>0.18</td>
</tr>
<tr>
<td>OOP+ (n = 50)</td>
<td>3.93</td>
<td>4.14</td>
<td>0.21</td>
</tr>
<tr>
<td><strong>Own Frequency</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Own NPO</td>
<td>3.45</td>
<td>3.83</td>
<td>0.38**</td>
</tr>
<tr>
<td>OOP</td>
<td>3.64</td>
<td>3.93</td>
<td>0.29*</td>
</tr>
<tr>
<td>OOP+</td>
<td>3.67</td>
<td>3.91</td>
<td>0.24</td>
</tr>
<tr>
<td><strong>Own Social Approval</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Own NPO</td>
<td>2.46</td>
<td>2.52</td>
<td>0.06</td>
</tr>
<tr>
<td>OOP</td>
<td>2.45</td>
<td>2.58</td>
<td>0.13</td>
</tr>
<tr>
<td>OOP+</td>
<td>2.47</td>
<td>2.59</td>
<td>0.12</td>
</tr>
<tr>
<td><strong>Other/Student Quantity</strong></td>
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</tr>
<tr>
<td>Other/Student NPO (n = 83)</td>
<td>5.72</td>
<td>4.95</td>
<td>-0.77**</td>
</tr>
<tr>
<td>OOP</td>
<td>5.69</td>
<td>5.48</td>
<td>-0.21</td>
</tr>
<tr>
<td>OOP+ (n = 50)</td>
<td>5.96</td>
<td>5.42</td>
<td>-0.54*</td>
</tr>
<tr>
<td><strong>Other/Student Frequency</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other/Student NPO</td>
<td>4.90</td>
<td>4.53</td>
<td>-0.37**</td>
</tr>
<tr>
<td>OOP</td>
<td>5.28</td>
<td>4.94</td>
<td>-0.34**</td>
</tr>
<tr>
<td>OOP+</td>
<td>5.20</td>
<td>4.82</td>
<td>-0.38**</td>
</tr>
<tr>
<td><strong>Other/Student Social Approval</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Other/Student NPO</td>
<td>2.96</td>
<td>3.01</td>
<td>0.05</td>
</tr>
<tr>
<td>OOP</td>
<td>3.09</td>
<td>3.12</td>
<td>0.03</td>
</tr>
<tr>
<td>OOP+</td>
<td>3.10</td>
<td>3.06</td>
<td>-0.04</td>
</tr>
<tr>
<td><strong>Quantity Self-Other Difference</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Quantity NPO (n = 83)</td>
<td>1.23</td>
<td>0.36</td>
<td>-0.87**</td>
</tr>
<tr>
<td>OOP</td>
<td>2.05</td>
<td>1.66</td>
<td>-0.39</td>
</tr>
<tr>
<td>OOP+ (n = 50)</td>
<td>2.03</td>
<td>1.28</td>
<td>-0.75**</td>
</tr>
<tr>
<td><strong>Frequency Self-Other Difference</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Frequency NPO</td>
<td>1.45</td>
<td>0.70</td>
<td>-0.75***</td>
</tr>
<tr>
<td>OOP</td>
<td>1.64</td>
<td>1.01</td>
<td>-0.63***</td>
</tr>
<tr>
<td>OOP+</td>
<td>1.53</td>
<td>0.91</td>
<td>-0.62**</td>
</tr>
<tr>
<td><strong>Social Approval Self-Other Difference</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Social Approval NPO</td>
<td>0.50</td>
<td>0.49</td>
<td>-0.01</td>
</tr>
<tr>
<td>OOP</td>
<td>0.64</td>
<td>0.54</td>
<td>-0.10</td>
</tr>
<tr>
<td>OOP+</td>
<td>0.63</td>
<td>0.47</td>
<td>-0.16</td>
</tr>
</tbody>
</table>

* p < .05, ** p < .01, *** p < .001
NPO: n = 84, OOP: n = 50, OOP+: n = 49, unless otherwise noted
program affected any of the dependent variables. As indicated in Table 9, there were few changes in students' own alcohol use and attitudes. On the other hand, students' perceptions of their peers alcohol use changed considerably. The NPO and OOP+ groups both decreased their perceptions of other students' quantity, and all groups decreased their perceptions of other students' frequency. There were no changes in any of the social approval measures.

During on-campus orientation, students in the no pre-orientation group (NPO) reported a significant increase in their own frequency of alcohol use from Time 2 ($M = 3.45, SD = 2.10$) to Time 3 ($M = 3.83, SD = 2.08$) ($t(83) = -3.03, p = .003$) with a moderate effect size ($eta^2 = .10$). Students in the control group (OOP) also reported a significant increase in own frequency from Time 2 ($M = 3.64, SD = 2.21$) to Time 3 ($M = 3.93, SD = 2.16$) ($t(49) = -2.39, p = .021$) with a moderate effect size ($eta^2 = .10$). Students in the OOP+ group also increased from Time 2 ($M = 3.67, SD = 1.88$) to Time 3 ($M = 3.91, SD = 1.78$), however this increase only approached significance ($t(49) = -1.95, p = .057$). Unlike frequency of alcohol use, there were no significant changes in own quantity or own social approval in any of the three groups.

While there were increases in self-reported own frequency during the on-campus orientation, perceptions of other students' quantity and frequency decreased during the same period. Students in the NPO group and the OOP+ group significantly decreased their perceptions of other students' quantity of alcohol use. In the NPO group, perceptions of other students' quantity changed from Time 2 ($M = 5.72, SD = 2.47$) to Time 3 ($M = 4.95, SD = 2.46$) ($t(82) = 3.50, p = .001$) with a moderate effect size ($eta^2 = .13$). In the OOP+ group, the decrease from Time 2 ($M = 5.96, SD = 2.56$) to Time 3 ($M =
5.42, \( SD = 2.56 \) was also significant \((t(49) = 2.64, p = .011)\) a moderate effect size \((\eta^2 = .12)\)

All three groups significantly lowered their perceptions of other students’ frequency during on-campus orientation. The NPO group changed from Time 2 \((M = 4.90, \ SD = 1.12)\) to Time 3 \((M = 4.53, \ SD = 1.14)\) \((t(83) = 3.12, p = .002)\) with a moderate effect size \((\eta^2 = .10)\). The change in the OOP group was similar, Time 2 \((M = 5.28, \ SD = 0.86)\) to Time 3 \((M = 4.94, \ SD = 1.00)\) \((t(49) = 2.84, p = .007)\) with a large effect size \((\eta^2 = .14)\). Finally, the OOP+ group also decreased their perceptions of other students’ frequency of drinking from Time 2 \((M = 5.20, \ SD = 1.04)\) to Time 3 \((M = 4.82, \ SD = 0.97)\) \((t(48) = 2.86, p = .006)\) with a large effect size \((\eta^2 = .15)\). There were no significant changes in any of the groups’ perceptions of other students’ social approval.

The combination of increases in own alcohol use, and decreases in perceptions of other students produced several significant decreases in self-other differences. Both the NPO group and the OOP+ group decreased their mean quantity self-other difference. The NPO group decreased from Time 2 \((M = 1.23, \ SD = 3.22)\) to Time 3 \((M = 0.36, \ SD = 3.49)\) \((t(82) = -3.32, p = .001)\) a moderate effect size \((\eta^2 = .11)\). The OOP+ group decreased from Time 2 \((M = 2.03, \ SD = 2.71)\) to Time 3 \((M = 1.28, \ SD = 2.80)\) \((t(49) = -3.59, p = .001)\) with a large effect size \((\eta^2 = .21)\). The OOP group’s quantity self-other difference did not change significantly.

All three groups decreased their frequency self-other difference significantly. The NPO group decreased significantly from Time 2 \((M = 1.45, \ SD = 2.00)\) to Time 3 \((M = 0.70, \ SD = 1.94)\) \((t(83) = -5.09, p < .001)\) with a large effect size \((\eta^2 = .13)\). The OOP group decreased significantly from Time 2 \((M = 1.64, \ SD = 2.16)\) to Time 3 \((M = 1.01, \ SD = 1.60)\) \((t(49) = -3.12, p = .002)\) with a large effect size \((\eta^2 = .14)\).
\[ SD = 1.84, t (49) = -4.58, p <.001 \] with a large effect size \((eta^2 = .30)\) The OOP+ group also decreased significantly on frequency self-other difference from Time 2 \((M = 1.53, SD = 1.61)\) to Time 3 \((M = 0.91, SD = 1.64)\) \((t (48) = -3.49, p = .001)\) with a large effect size \((eta^2 = .20)\)

In order to compare the relative impact of the traditional on-campus orientation on the NPO, OOP, and OOP+ groups, one-way between-groups analyses of variance were conducted to compare the change scores and Time 3 scores between groups. There were no significant differences between the change scores for any of the nine dependent variables. Although on-campus orientation influenced alcohol beliefs and attitudes, no group changed significantly more than any other. There was one significant difference found between the groups at Time 3. The one-way ANOVA found a statistically significant difference at the \(p < .05\) level in quantity self-other difference for the three groups \((F (2, 181) = 3.407, p = .035)\). Although the difference between the groups was statistically significant, the effect size was small \((eta^2 = 0.04)\), Post-hoc comparisons using the Tukey HSD test indicated the mean quantity self-other difference for the NPO group \((M = 0.36, SD = 3.49)\) was significantly different from the OOP group self-other difference \((M = 1.66, SD = 2.36)\) \((mean \ diff = 1.30, p = .040)\). The OOP+ group did not differ significantly from either the OOP or NPO group. This meant the NPO group had significantly less pluralistic ignorance than the OOP group, but not significantly less than the OOP+ group.

Attrition analyses were performed to determine if students who completed surveys at Time 3 \((N = 178)\) were different from students who completed surveys at pretest \((N = 208)\). Chi-square analyses were used to examine gender differences, and
independent samples t-tests were used to compare own quantity, own frequency, and age at first drink. Chi-square analysis found no significant differences between the groups by gender, and t-tests found no significant differences in quantity, frequency, or age at first drink.

During the traditional on-campus orientation program, students in the NPO and OOP groups significantly increased, on average, their self-reported own frequency of alcohol use. During the same period, students in all three groups decreased their perceptions of other students’ frequency of alcohol use, while only students in the NPO and OOP+ groups decreased their perceptions of other students’ quantity of alcohol use. As a result of these changes, all three groups (OOP, OOP+, and NPO) experienced decreases in their pluralistic ignorance. The OOP+ and NPO groups experienced significant decreases in their quantity and frequency self-other-differences. The OOP group experienced a decrease in frequency self-other difference, but no change in quantity self-other difference. None of the groups experienced significant changes in their social approval self-other-differences. At the end of the traditional on-campus orientation program, the quantity self-other difference of the NPO group was significantly less than the quantity self-other difference of the OOP group. However, this result has less practical significance considering the NPO group’s quantity self-other difference was also significantly less at pre-test (see Table 7).

**Questions Three a & b:** Was there an interaction between participation in outdoor orientation (in the OOP or OOP+ group), and participation in the traditional on-campus orientation (Time 1 – Time 3) that affected students’ pluralistic ignorance about alcohol
use and attitudes? How did this interaction compare to participation in only on-campus orientation?

Question Three assessed the impact of the total orientation experience on incoming students, defined as the outdoor orientation program plus the on-campus orientation for the OOP and OOP+ groups. The total orientation experience for the OOP and OOP+ groups was compared to the on-campus orientation for the NPO group. To assess this impact, students’ alcohol use and attitudes were compared from their first day on campus (Time 1 for OOP and OOP+, and Time 2 for NPO) until the end of the total orientation experience (Time 3 for all groups). While assessing the impact of the total orientation experience, it was also desirable to understand the impact of the component parts of that experience, therefore data was included only from OOP and OOP+ students who completed surveys at Times 1, 2, and 3. Table 10 reports the pre and post-test means for all nine of the dependent variables, split by group, along with the change scores (i.e. mean difference) for each variable. There were 92 students in the outdoor orientation program completed who surveys at Times 1, 2, and 3, along with 84 students from the NPO group who completed surveys at Times 1 and 2. In total, this provided data from 176 (45%) respondents. Paired samples t-tests (two-tailed) were conducted to determine the impact of the total orientation experience on the nine dependent variables. As Table 10 indicates, there were significant changes in own frequency of alcohol use in all three groups, as well as a significant change in the OOP group’s own social approval. Only the NPO group experienced significant changes in their perceptions of other students, however all three groups experienced some change in self-other differences.
Table 10
Alcohol Use, Approval, and Self Other Differences after Orientation

<table>
<thead>
<tr>
<th>Variable</th>
<th>Pre Time1/2</th>
<th>Post Time3</th>
<th>Mean diff (Mean - Change Scores)</th>
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<tr>
<td>OOP</td>
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<td>3.43</td>
<td>0.21</td>
</tr>
<tr>
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<td>4.15</td>
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<td>2.52</td>
<td>0.06</td>
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<td>OOP</td>
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<td>2.47</td>
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</tr>
<tr>
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<td>-0.77**</td>
</tr>
<tr>
<td>OOP</td>
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</tr>
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<td>3.02</td>
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<td>Quantity Self-Other Difference</td>
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<td>NPO (n = 83)</td>
<td>1.23</td>
<td>0.36</td>
<td>-0.87**</td>
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<td>OOP</td>
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<td>OOP+ (n = 47)</td>
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<td>Frequency Self-Other Difference</td>
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<td>-0.73***</td>
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<td>OOP+</td>
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<td>0.99</td>
<td>-0.49**</td>
</tr>
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<td>Social Approval Self-Other Difference</td>
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<td></td>
</tr>
<tr>
<td>NPO</td>
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<td>0.49</td>
<td>-0.01</td>
</tr>
<tr>
<td>OOP</td>
<td>0.60</td>
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<td>-0.05</td>
</tr>
<tr>
<td>OOP+ (n = 45)</td>
<td>0.52</td>
<td>0.48</td>
<td>-0.04</td>
</tr>
</tbody>
</table>

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

NPO: n = 84, OOP: n = 46, OOP+: n = 46, unless otherwise noted
Although none of the groups experienced significant changes in own quantity of alcohol use, all three groups reported increases in their own frequency. Since the NPO group did not participate in any pre-orientation, there results are the same as reported in Question Two. As previously noted students in the no pre-orientation group (NPO) reported a significant increase in their own frequency of alcohol use from Time 2 to time 3 \( (t (83) = -3.03, p = .003, \text{eta}^2 = .10) \). As a result of the combined outdoor and on-campus orientations, students in the OOP group increased their mean frequency from Time 1 \( (M = 3.02, SD = 2.22) \) to Time 3 \( (M = 3.79, SD = 2.19) \) \( (t (46) = -4.03, p < .001) \) with a large effect size reported \( (\text{eta}^2 = .27) \). Similarly, students in OOP+ increased their mean frequency from Time 1 \( (M = 3.52, SD = 1.83) \) to Time 3 \( (M = 3.82, SD = 1.78) \) \( (t (45) = -3.00, p = .004) \) with a large effect size \( (\text{eta}^2 = .17) \). Just one group, OOP, had a significant change in own social approval. On average, students in the OOP group increased their social approval from Time 1 \( (M = 2.21, SD = 0.75) \) to Time 3 \( (M = 2.47, SD = 0.70) \) \( (t (45) = -2.72, p = .009) \) with a large effect size \( (\text{eta}^2 = .14) \).

There was little significant change in perceptions of other students’ alcohol use and attitudes from pre-test to Time 3. Neither the OOP nor OOP+ group had any significant changes in their perceptions of other students’ quantity, frequency, or social approval. However, there was an increase in the OOP group’s perception of other students’ quantity of alcohol use from Time 1 \( (M = 4.67, SD = 1.99) \) to Time 3 \( (M = 5.13, SD = 2.01) \) that approached significance \( (t (45) = -1.99, p = .053) \) with a moderate effect size \( (\text{eta}^2 = .08) \). As reported earlier, for the NPO group there were significant differences between Time 2 and Time 3 for both perceptions of other students’ quantity of drinking \( (t (82) = -3.50, p = .001, \text{eta}^2 = .13) \), as well as perceptions of other students’
frequency of drinking from Time 2 to Time 3 ($t(83) = -3.12, p = .002, \eta^2 = .10$). There were no other significant changes in any group’s perceptions of other students’ alcohol use or attitudes.

Only the NPO group experienced any significant change in quantity self-other difference. Quantity self-other difference decreased from Time 2 to Time 3 ($t(82) = -3.32, p = .001, \eta^2 = .11$). All three groups experienced significant decreases in mean frequency self-other difference. As previously noted the NPO group decreased from Time 2 to Time 3 ($t(83) = -5.09, p < .001, \eta^2 = .24$). The OOP group decreased from Time 1 ($M = 1.87, SD = 2.02$) to Time 3 ($M = 1.14, SD = 1.86$) ($t(45) = 4.52, p < .001$) with a large effect size reported ($\eta^2 = .31$). The OOP+ group also decreased from Time 1 ($M = 1.48, SD = 1.50$) to Time 3 ($M = .99, SD = 1.62$) ($t(45) = 2.88, p = .006$) with a large effect size reported ($\eta^2 = .27$).

In order to compare the relative impact of each groups total orientation experience, one-way between-groups analyses of variance were conducted to compare the change scores and Time 3 scores between groups (this comparison of Time 3 scores is different than in Question Two because of the use of matched samples from Times 1, 2, and 3). There were two between group differences in change scores. A one-way ANOVA found a statistically significant difference between the groups’ perceptions of other students’ quantity of alcohol use change scores ($F(2, 173) = 6.97, p = .001$). The actual difference in mean scores was moderate ($\eta^2 = .07$). Post-hoc comparisons using the Tukey HSD test indicated the mean change score for the NPO group ($M = -.77, SD = 2.01$) was significantly different from the OOP group’s change score ($M = 0.46, SD = 1.56$) ($mean \ diff = 1.23, p = .004$) and the OOP+ group’s change score ($M = 0.30, SD = 1.35$).
2.48) \( (\text{mean diff} = 1.07, p = .013) \). The OOP group was not significantly different from the OOP+ group. This indicated that while the NPO group significantly decreased their quantity self-other difference, the total orientation experience left the OOP and OOP+ groups relatively unaffected.

There was also a statistically significant difference in quantity self-other difference scores for the three groups \( (F (2, 173) = 5.09, p = .007) \). The difference in mean scores between the groups was moderate \( (\eta^2 = .06) \). Post-hoc comparisons using the Tukey HSD test indicated the mean change score for the NPO group \( (M = -.87, SD = 2.38) \) was significantly different from the OOP group \( (M = .24, SD = 1.55) \) \( (\text{mean diff} = 1.11, p = .015) \), and from the OOP+ group \( (M = .06, SD = 2.15) \) \( (\text{mean diff} = .93, p = .046) \). The two OOP groups did not differ significantly from each other. Since the NPO group’s change in quantity self-other difference was due almost entirely to the change in perception of other students’ quantity, it was not surprising to find significant differences between groups for both of these two variables.

A comparison of Time 3 scores using a one-way ANOVA found there was a statistically significant difference between the groups’ quantity self-other difference scores at Time 3 \( (F (2, 174) = 3.478, p = .033) \). The actual difference in the mean scores was small \( (\eta^2 = .04) \). Post-hoc comparisons using the Tukey HSD test indicated the mean quantity self-other difference for the NPO group \( (M = 0.36, SD = 3.49) \) was significantly different than for the OOP group \( (M = 1.70, SD = 2.41) \) \( (\text{mean diff} = .34, p = .043) \). The OOP+ group \( (M = 1.36, SD = 2.84) \) did not differ significantly from either the NPO or OOP groups. This finding lacks practical significance considering the NPO
group already had a significantly smaller quantity self-other difference at pre-test than did the combined OOP group (see Table 7).

Students in all groups reported increases in their frequency of alcohol use during their total orientation experience. Figure 2 shows the relative contributions of the outdoor and on-campus orientation programs to those increases. Interestingly, the magnitude of the increase appears to have been larger for the OOP group than the OOP+ group during outdoor orientation. Figure 3 shows a similar pattern for own social approval. The OOP group appears to have experienced a larger increase in social approval during outdoor orientation than the OOP+ group. Only the NPO group experienced significant changes in their perceptions of other students (as described in Question Two). Figure 1 shows the increases experienced by the OOP and OOP+ groups during their total orientation experience appear to have occurred during the outdoor orientation, which seems to have buffered the positive impacts of the on-campus orientation. Figure 2 shows a similar effect for perceptions of other students’ frequency of alcohol use. The NPO group’s perception decreased significantly, while the outdoor orientation program buffered the impact on the OOP and OOP+ groups. Finally, the significant decrease in the NPO group’s quantity self-other difference was primarily a result of a decrease in their perception of other students, but was helped by the NPO groups relatively high own quantity (see Figure 1). The changes in frequency self-other differences for all groups resulted from the combination of decreased perceptions of other students’ frequency, along with increases in own frequency, which is illustrated in Figure 2.
Figure 1. Quantity (T1-T2-T3) - Own, students in general, and self-other differences.

(a) T3 was significantly different from (T1)
(b) The difference between T3 and pretest (T1) approached significance
Figure 2. Frequency (T1-T2-T3) - Own, students in general, and self-other differences.
Figure 3. Social approval (T1-T2-T3) - Own, students in general, and self-other differences.

(a) T3 was significantly different from pretest.
**Question Four:** After one semester of college (Time 4), did students who participated in the outdoor orientation program (either in the OOP or OOP+ group) report different alcohol use or attitudes than students who did not participate in any pre-orientation (NPO group)?

Table 11 reports the means at pre (Time 1 for the OOP and OOP+ groups, Time 2 for the NPO group) and post-test (Time 4 for all groups) for all nine of the dependent variables, split by group, along with the change scores (i.e. mean difference) for each variable. In all, 118 (30%) respondents completed surveys at pretest (Time 1 or two, depending on group) and Time 4. Paired samples t-tests (two-tailed) were conducted to determine if students in the three groups differed on any of the nine dependent variables over the course of their first semester of college. As Table 11 indicates, there were numerous increases in both students' self-reported alcohol use and attitudes, as well as their perceptions of other students. However, self-other differences only changed for frequency.

On average, students in both the OOP and OOP+ groups reported significant increases in their own quantity of alcohol use. The OOP group increased from pre-test \(M = 2.46, SD = 2.54\) to end of semester \(M = 3.78, SD = 3.19\) \(t(40) = -5.21, p < .001\) with a large effect size \(\eta^2 = .40\). The OOP+ group also increased from pre-test \(M = 3.11, SD = 3.02\) to end of semester \(M = 4.13, SD = 2.92\) \(t(44) = -3.48, p = .001\) with a large effect size \(\eta^2 = .22\). The NPO group's quantity of alcohol did increase from pre-test \(M = 3.23, SD = 3.39\) to end of semester \(M = 3.78, SD = 3.76\); however, this increase only approached significance \(t(31) = -2.01, p = .054\), with a moderate effect size \(\eta^2 = .12\).
Table 11
 Alcohol Use, Approval, and Self Other Differences Time 1 to Time 4

<table>
<thead>
<tr>
<th>Variable</th>
<th>Pre Time1</th>
<th>Post Time4</th>
<th>Mean diff (Mean - Change Scores)</th>
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<tr>
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<td>3.23</td>
<td>3.78</td>
<td>0.55</td>
</tr>
<tr>
<td>OOP</td>
<td>2.46</td>
<td>3.78</td>
<td>1.32***</td>
</tr>
<tr>
<td>OOP+</td>
<td>3.11</td>
<td>4.13</td>
<td>1.02**</td>
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<td>0.72**</td>
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</tr>
<tr>
<td>OOP+</td>
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<td>4.07</td>
<td>1.16***</td>
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<td>OOP (n = 42)</td>
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<tr>
<td>OOP+ (n = 44)</td>
<td>0.59</td>
<td>0.73</td>
<td>0.14</td>
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</table>

* p < .05, ** p < .01, *** p < .001
NPO: n = 32, OOP: n = 41, OOP+: n = 45, unless otherwise noted
All three groups, on average, reported significant increases in their own frequency of alcohol use. The NPO group increased from pre-test ($M = 2.25, SD = 2.21$) to end of first semester ($M = 2.97, SD = 2.29$) ($t (31) = -3.13, p = .004$) with a large effect size ($eta^2 = .24$). In the OOP group, frequency increased from pre-test ($M = 2.44, SD = 2.30$) to end of semester ($M = 3.61, SD = 2.25$) ($t (40) = -4.65, p < .001$) with large effect size ($eta^2 = .35$). The OOP+ group also increased from pre-test ($M = 2.91, SD = 2.17$) to end of semester ($M = 4.07, SD = 1.99$) ($t (44) = -4.23, p < .001$) with a large effect size ($eta^2 = .29$).

Perceptions of other students’ quantity of alcohol used increased for students in the OOP and OOP+ groups. The OOP group increased from pretest ($M = 4.92, SD = 2.13$) to end of the semester ($M = 6.26, SD = 2.73$) ($t (38) = -3.57, p = .001$) with a large effect size ($eta^2 = .25$). The OOP+ group increased from pretest ($M = 5.33, SD = 2.70$) to end of semester ($M = 6.31, SD = 2.26$) ($t (44) = -2.74, p = .009$) with a large effect size ($eta^2 = .15$).

While all three groups had increases in their perceptions of other students’ frequency of alcohol use, the increase was only significant for the OOP+ group. The increase was from pretest ($M = 4.96, SD = 1.07$) to end of semester ($M = 5.36, SD = 0.77$) ($t (44) = -2.40, p = .020$) with a moderate effect size ($eta^2 = .12$).

All three groups reported increases in perceptions of other students’ social approval of alcohol use. The NPO group increased from pretest ($M = 2.98, SD = 2.35$) to end of semester ($M = 3.42, SD = 1.05$) ($t (32) = -3.01, p = .005$) with a large effect size ($eta^2 = .22$). The OOP group increased from pretest ($M = 2.85, SD = 0.81$) to end of semester ($M = 3.19, SD = 0.84$) ($t (41) = -2.58, p = .014$) with a large effect size ($eta^2 = .
Finally, the OOP+ group increased from pretest ($M = 2.98$, $SD = 0.70$) to end of semester ($M = 3.29$, $SD = 0.88$) ($t (43) = -2.73$, $p = .009$) with a large effect size ($eta^2 = .15$).

The only significant changes in self-other differences were in frequency. Both the OOP and OOP+ groups significantly decreased their frequency self-other differences, though these decreases were mainly attributable to reporting increases in their own frequency, rather than decreases in their perceptions of other students’ frequency. The OOP group decreased their self-other difference from pretest ($M = 2.55$, $SD = 2.00$) to end of semester ($M = 1.68$, $SD = 2.31$) ($t (39) = 3.10$, $p = .004$) with a large effect size ($eta^2 = .20$). The OOP+ group’s frequency self-other difference decreased from pretest ($M = 2.04$, $SD = 1.78$) to end of semester ($M = 1.29$, $SD = 1.85$) ($t (44) = 2.59$, $p = .013$) with a moderate effect size ($eta^2 = .13$).

In order to compare the changes in the NPO, OOP, and OOP+ groups over the course of one semester, one-way between-groups ANOVAs were conducted to compare the change scores and Time 4 scores between groups. There were no significant differences found between the groups change scores, or their scores at the end of the semester.

Attrition analyses were performed to determine if students who completed surveys at Time 4 ($N = 121$) were different from students who completed surveys at Time 1 ($N = 265$). Chi-square analyses were used to examine gender differences, and independent samples $t$-tests were used to compare own quantity, own frequency, and age at first drink. Chi-square analysis (with Yates Continuity Correction) found no gender difference in the NPO group or the OOP+ group. In the OOP group, there was a
significant difference by gender. Women (49.2%) were significantly more likely than men (26.2%) to complete survey four ($\chi^2$ (1, n=107) = 4.717, $p = .030$, phi = .229). In the NPO group, independent samples $t$-tests found students who participated at Time 4 ($M = 3.20, SD = 3.34$) reported significantly less quantity of alcohol use than students who only participated at Time 1 ($M = 4.88, SD = 3.44$) ($t (182) = 2.56, p = .011$). Time 4 participants ($M = 2.27, SD = 2.18$) also reported significantly lower frequency than Time 1 only participants ($M = 3.67, SD = 2.09$) ($t (182) = 3.46, p = .001$). In addition, Time 4 participants reported they started drinking significantly earlier ($M = 2.97, SD = 2.11$) than Time 1 only participants ($M = 3.80, SD = 1.52$) ($t (39.6) = 2.14, p = .038$). This corresponds to an age between 11 and 12 for the Time 4 participants and between 13 and 14 for the Time 1 participants. In the OOP group, students who participated at Time 4 ($M = 2.60, SD = 2.58$) reported significantly less quantity of alcohol use than students who only participated at Time 1 ($M = 3.77, SD = 2.95$) ($t (105) = 2.11, p = .037$). In the OOP+ group, students who participated at Time 4 ($M = 3.11, SD = 3.02$) reported significantly less quantity of alcohol use than students who only participated at Time 1 ($M = 4.44, SD = 3.37$) ($t (93) = 2.02, p = .047$). Time 4 participants ($M = 2.91, SD = 2.17$) also reported significantly lower frequency than Time 1 only participants ($M = 4.20, SD = 1.69$) ($t (82.9) = 3.20, p = .002$). These attrition threats must be considered when interpreting any results from Question Four. The validity of any findings from Question Four should be considered carefully given the large number of attrition threats.

Overall, students in all three groups reported increases in their quantity and frequency of alcohol use during their first semester of college. These increases were all statistically significant, except for the increase in the NPO group’s report of their own
quantity, which only approached significance \((p = .054)\). Students in the NPO group increased their perception of other students' social approval, meaning they believed their peers had a more liberal attitude towards alcohol and related behaviors. Students in the OOP group reported increases in both their perceptions of other students' social approval and their peers' frequency of alcohol use. The OOP+ group reported increases in other students' quantity, frequency, and social approval. The only changes in self-other differences were for students in the OOP and OOP+ groups, both decreased their self-other differences. However, these decreases were primarily a result of increases in own frequency, rather than decreases in their perceptions of other students. There were no significant differences between the groups change scores, indicating that while there was change, no group changed more than another. In addition, students in all groups had statistically similar patterns of alcohol use and attitudes at the end of the semester.
CHAPTER V

DISCUSSION

Introduction

An increasing number of colleges and universities are using outdoor orientation programs as a means to facilitate a successful transition from high school to college. Research indicates one way these programs are successful in easing this transition is by increasing the social support network students have on campus. This study was designed to investigate how outdoor orientation could further support the successful transition to college by helping students form a more accurate perception of alcohol use norms on campus. Social norms theory suggests students with more accurate perceptions of alcohol use norms tend to be more moderate drinkers and experience fewer of the negative consequences associated with excessive alcohol use.

The purpose of this chapter is to describe the findings from this study and their practical and theoretical significance in the areas of outdoor orientation and social norms theory. Limitations will be discussed, along with recommendations for future research integrating social norms theory with outdoor orientation research.
Summary of Findings

Descriptive and Demographic Differences at Pretest

Several differences between the no pre-orientation (NPO) and combined outdoor orientation (OOP) groups were found at pretest. Notably, there were significant differences in reports of own quantity of alcohol use and differences by gender in the two groups. Students in the NPO group reported a significantly higher quantity (4.63 drinks per occasion) than students in the combined OOP group (3.56 drinks per occasion), indicating more moderate drinkers self-selected into the outdoor orientation program. This selection bias has not previously been observed in outdoor orientation programs. Future research should consider if this finding is generalizable to other outdoor orientation programs. The significant gender difference is also noteworthy. Women were significantly more likely than men to participate in the outdoor orientation program. This is important to consider in this study because responses to pluralistic ignorance may vary by gender. Prentice and Miller (1993) found men reacted to pluralistic ignorance by conforming to their perception of the norm (i.e. drinking more), whereas women reacted to pluralistic ignorance by feeling more alienated from the college and their peers.

Question One a & b

Question 1 assessed the impact of the outdoor orientation program, with (OOP+) and without (OOP) social norms leader training, on students’ own drinking and attitudes and their perceptions of other students’ drinking and attitudes. Contrary to the findings of Wardwell (1999), who found outdoor orientation participants decreased their misperceptions of alcohol use by their peers, the participants in the OOP group experienced significant increases in their perceptions of other students’ quantity and
approval of alcohol use. Wardwell hypothesized students decreased their misperceptions because “[outdoor orientation] is an environment where students are exposed to the concept of pluralistic ignorance. They may not know what it’s called and the leaders have not been trained in exposing it, but through the natural course of a trip misperceived norms are corrected” (p. 33). Wardwell’s conclusion that outdoor orientation programs, and presumably the leaders, correct misperceptions runs contrary to the findings of other researchers who have found most students, even those students with moderate personal behaviors, may be “carriers of the norm” of permissive alcohol use (Perkins, 1997). In describing this phenomenon, Perkins specifically noted the negative impact “role models” can have as carriers of misperceptions:

Student roles [sic] models may have an unexpected negative effect on other students' misperceptions of peer norms. Most high profile students—resident advisors, student government leaders, star athletes, honors students—may exhibit less substance abuse than other students and therefore function as models of good behavior. Nonetheless, these students are just as likely to misperceive their peers' attitudes as other students are (Berkowitz & Perkins, 1986a; Perkins & Berkowitz, 1988) and to communicate these misperceptions in conversation. Ironically, then, with their disproportionate influence on socialization, these role models may be counterproductive, passing along misperceptions about the normative culture of alcohol or other drug use. For example, if a resident advisor talks casually about how most students abuse alcohol, then that advisor transmits false perceptions and creates pressure to abuse, even though his or her own behavior does not encourage abuse. To again use the image of a contagious disease, just as students in general are carriers of misperceptions, so too are role models. And their greater contact with others can be disproportionately destructive—more "virulent"—in passing on the misperception. Thus, it is essential for any program that addresses misperceptions to target students who serve as role models, just as it is for that program to target problem-prone groups. (p. 200)

In addition to reporting increases in their perceptions of other students, the OOP group reported significant increases in their own frequency and approval of alcohol use. Consistent with social norms theory, students not only overestimated the use and approval of their peers, they also conformed to those misperceptions by altering their
self-reports at a time when they were not consuming alcohol. It is unlikely the increase in frequency reflects any actual change in use, rather it is most likely the result of a desire to “fit in” with the perception of an “average” student.

During the same period, students in the OOP+ group did not experience any significant changes in their own alcohol use or attitudes, or their perceptions of other students. While the social norms training was not successful in reducing the misperceptions held by these students, it does seem to have been successful in diminishing and even eliminating the effects leaders seem to have had as “carriers of the norm” of permissive alcohol use. In turn, this seems to have reduced the pressure students in the OOP+ group felt to alter their self-reported alcohol use in order to “fit in” with their peers.

As noted above, the OOP group experienced significant increases in four of the dependent variables, while the OOP+ group had no significant changes. However, the magnitude of change between the groups was only significantly different for one of these outcomes, own frequency. OOP participants significantly increased their self-reported own frequency of alcohol use, as compared with the OOP+ participants.

Leaders of both groups were asked to indicate whether alcohol was discussed during their trips, and if so, how long the discussions lasted. Leaders from the OOP condition reported an average of 32.1 minutes spent discussing alcohol. The OOP+ group leaders reported an average of 24.1 minutes. An independent samples t-test revealed the average length of discussions were not significantly different. These estimates do not indicate the amount of time participants spent discussing alcohol apart from group leaders. The 24.1 minutes OOP+ leaders spent discussing alcohol was much shorter than
the length of the targeted interventions described by Peeler et al. (2000) and Schroeder & Prentice (1998) in their work with incoming students. While it is impossible to say for certain, it seems plausible there would have been greater differences between the OOP and OOP+ groups had the OOP+ participants received a larger “dose” of social norms information. It also seems likely the observed differences between the two conditions appear smaller than they actually were due to attrition. Students who dropped out of the study from the OOP group (N = 30, mean quantity = 4.72 drinks per occasion) were heavier drinkers than those who completed surveys at Time 2 (N = 178, mean quantity = 3.10 drinks per occasion), while no similar pattern of attrition was found for the OOP+ group.

The results of Question 1 suggest that untrained outdoor orientation leaders are, as Perkins (1997) described, “carriers of the misperception” of permissive alcohol use, and as such can have a detrimental effect on incoming students’ perceptions of alcohol use on campus. Trained leaders, on the other hand, appear not to have this negative effect. These findings suggest a need for more training to address leaders’ misperceptions so that they do not add to, but rather decrease, students’ misperceptions.

**Question Two a & b**

During the traditional on-campus orientation program all three groups, OOP, OOP+, and NPO, experienced significant decreases in their perceptions of other students’ frequency of alcohol use. Presumably the on-campus orientation had a stronger focus on alcohol use in terms of educating students about making responsible choices and the laws and policies of underage alcohol use than did the outdoor orientation program. Interestingly, while all three groups decreased their perceptions of other students’
quantity of alcohol use, the decrease was only significant for the NPO and OOP+ groups. The norms students in the OOP group learned about during outdoor orientation may have been contrary to what they learned during on-campus orientation, thereby mitigating the effects of the on-campus orientation.

On-campus orientation is a “dry-week” meaning that students are mostly not consuming alcohol. However, students in the NPO and OOP groups reported significant increases in their frequency of alcohol use during this time. Consistent with social norms theory, these increases may have been the result of students conforming to their perception of the campus norm in order to “fit in” and avoid feelings of deviance. Students in the OOP+ group did not significantly increase their self-reported frequency during this period. Question 2 further supports the findings of Question 1, the social norms information OOP+ students received from their leaders during the outdoor orientation seems to have “protected” them from their misperceptions, while students in the OOP group were “infected” by the leaders misperceptions. Theoretically, the OOP+ students knew their perceptions were inaccurate, and therefore felt less pressure to adjust their self-reports in order to “fit-in.”

**Question Three a & b**

Students in the OOP and OOP+ groups had a total orientation experience consisting of both outdoor and on-campus orientation. Students in the NPO group only experienced on-campus orientation. As Gass (1987) noted, outdoor orientation programs should be evaluated by the same standards as on-campus orientation programs and ought to adopt similar goals, making it was desirable to compare the outcomes of the OOP groups’ total orientation experience to the NPO group’s traditional orientation.
experience. Answering this question accurately was somewhat confounded by attrition during the study. Matching samples across Times 1, 2, and 3 produces different samples and results than comparing Times 1 and 2 and Times 2 and 3 separately. Nonetheless, this longitudinal analysis does provide some additional insight.

Participants in the OOP and OOP+ groups experienced similar patterns of change, increasing their perceptions of other students’ alcohol use during the outdoor orientation, and then decreasing their perceptions during on-campus orientation (see Chapter 4, Figures 1, 2, and 3). The overall effect (Time 1 to Time 3) was that students in the OOP and OOP+ groups did not significantly change their perceptions of other students’ quantity, frequency, or social approval of alcohol use. On the other hand, students in the NPO group experienced significant decreases in their perceptions of other students’ quantity and frequency of alcohol use. It appears participation in the outdoor orientation program may have mitigated the effectiveness of on-campus orientation in reducing misperceptions of alcohol use by other students. This finding is consistent with Perkins (1997) finding that student role models are often carriers of the norm of permissive alcohol use. The decrease in the NPO group’s perception of other students’ quantity was significantly different from the changes in both the OOP and OOP+ groups.

During the same period, all three groups reported increases in their own frequency of alcohol use. Given that this was a dry period on campus, these increases seem to indicate students were once again conforming to their perceptions of the norm in order to “fit-in” with perceptions of their peers. Students in the OOP group reported an increase twice as large as either the OOP+ or NPO groups, however this difference was not statistically significant. Students in the OOP group also reported a statistically significant
increase in their own social approval, indicating these students increased their acceptance of alcohol related behaviors and consequences during their total orientation experience while the OOP+ students did not.

The implications of Question 3 are not as clear as the first two questions, partially because of the smaller matched sample from Times 1, 2, and 3. Based on this smaller sample, it appears that participation in the outdoor orientation program, regardless of leader training, mitigated the effectiveness of the on-campus orientation in reducing incoming students misperceptions. This finding indicates that not only is social norms training for outdoor orientation leaders is important, it is also critical that leaders follow through with their training, providing information about social norms and alcohol use that is accurate and consistent with the message being delivered during on-campus orientation.

**Question Four**

There were no significant differences between the groups for the nine dependent variables at Time 4. At the end of one semester, students in all three groups exhibited statistically similar levels of alcohol use and attitudes, as well as perceptions of other students’ use and attitudes. Change scores indicated that all groups increased their own alcohol use and attitudes during their first semester of college, as well as their perceptions of other students’ use and attitudes. In general, increases were larger for the OOP and OOP+ group than the NPO group. However, due to the significant attrition in all groups (see Chapter 4 for a complete discussion of attrition from Time 1 to Time 4), making specific comparisons between the groups is of limited value due to threats of validity.
Implications for Practice

This study provides important information about the transmission of alcohol norms during outdoor orientation programs. The most important of which is the recognition that outdoor orientation program leaders experience pluralistic ignorance. While leader misperceptions were not measured directly in this study, participant outcomes indicated this was the case. This conclusion is also supported by research on resident advisers who, despite their leadership roles and moderate personal attitudes toward alcohol, often share in the misperception that the alcohol use and attitudes of most students is quite liberal (Berkowitz & Perkins, 1986b). This finding contradicts the hypothesis of Wardwell (1999) who believed outdoor orientation leaders (absent any specific training or curriculum) contributed to the decreases in misperceptions experienced by the outdoor orientation participants in his study.

The finding that outdoor orientation leaders experience pluralistic ignorance supports the notion that campus role models may be “carriers of the misperception” of permissive alcohol use (Perkins, 1997). Given the high level of influence outdoor orientation leaders have as both role models, and the first “real” college students incoming students meet, it is essential that programs address this issue. First-year students are already a population uniquely at risk for increased alcohol use (Berkley-Patton et al., 2003). Given this risk, it is essential outdoor orientation programs not contribute to the problem.

One way to address leaders’ pluralistic ignorance is through training. In this study, OOP+ participants did not experience the same increase in misperceptions the OOP participants did, indicating the training was at least partially successful in reducing
leaders’ pluralistic ignorance, or the likelihood the leaders would transmit their misperceptions to incoming students. At the very least, programs should train leaders who are able to address alcohol use on campus, and answer questions in a way that is accurate, honest, and promotes an awareness of pluralistic ignorance and its consequences, as well as the consequences of heavy alcohol use. Whether leaders should also promote the moderate use of alcohol is a decision best left to individual programs and program administrators. When and if this decision is made, programs should take care that leaders are not alienating students, especially those who may already have liberal attitudes towards alcohol. One practical implication not explored in this study is whether including alcohol and social norms training will lead to a cultural shift among leaders and within a program. Anecdotal evidence from Harvard and Princeton Universities seems to indicate that when alcohol and social norms training is included annually and promoted by the program director, these program elements can themselves become a “norm” within the program, making the message delivered by leaders even more salient and credible to incoming students.

The social norms and alcohol training used during this study is outlined in Chapter 3 and APPENDIX A. Based on the success and challenges experienced by the researcher during that training, a new social norms and alcohol training intervention model is presented in Figure 5. This model draws from the lessons learned during this study as well as a review of the literature on training peer leaders of targeted social norms interventions (Barnett & et al., 1996; Peeler et al., 2000; Schroeder & Prentice, 1998), and a survey of alcohol trainings being conducted at several outdoor orientation programs.
(e.g. Harvard First-Year Outdoor Program, Princeton University Outdoor Action, and West Virginia University’s Adventure WV).

The model is comprised of four parts: training for OOP leaders, tools for OOP leaders, an “intervention” outline, and the contexts in which these tools/intervention can be used/facilitated to discuss alcohol use norms. The overarching goal for this model is to address the threat of OOP leaders as “carriers of the norm” by reducing the misperception leaders hold about alcohol use on campus. Trained leaders can address incoming students’ misperceptions about alcohol use, provide them with accurate norms, and alert them to the consequences of their misperceptions as well as the consequences of excessive alcohol use.
A three-hour training, which includes:

**Introduction**
- Pretest survey
- Objectives
- Agreement
- Vocabulary
- Why do students misperceive norms?
- What sources of information do students use to estimate norms?

**Misperceptions**
- OOP leader norms (Carriers of the misperception?)
  - Descriptive
  - Injunctive
  - Protective
- Students in general & First-year student norms
  - Descriptive
  - Injunctive
  - Protective

**Awareness**
- What impact do misperceptions have on behavior? (Intro to social norms theory)
- Who's on the trail with you? (Recognizing diversity within your group and upholding the FVC while discussing alcohol)
- Consequences of heavy drinking

Provides OOP leaders with a set of:

**Tools**
- Leave-A-Trace Guide
- First aiders guide to alcohol poisoning
- Campus policies & resources
- Protective factors
- Proactive conversations (You May Have Heard)
- Reactive conversations

That they can use to deliver at least a 45-minute “dose” of social norms/alcohol intervention that covers:

**Know**
- Pretest survey
- Discussion – What do you know about alcohol use on campus?
  - Alcohol
  - STIs
  - Social issues
  - Academic Issues
  - Diversity
  - Tolerance
  - Sustainability
- Leaders should watch-out for counterproductive story-telling. Use guiding questions to keep group on track.

**Want to know**
- You May Have Heard – Leaders can “seed” questions about alcohol myths, etc.
- Discussion – Perceptions vs. reality of college life
  - Alcohol
  - STIs
  - Social issues
  - Academic Issues
  - Diversity
  - Tolerance
  - Sustainability

**Learn**
- Alcohol norms for students & first-years
  - Descriptive
  - Injunctive
  - Protective
- Focus on reducing misperceptions & emphasizing responsible choices
- Discussion – What are the consequences of misperceptions?
- What are the consequences associated with excessive alcohol use?
- Schroeder & Prentice (1998) questions

Facilitated in one or more of these contexts:
- Informal/impromptu discussions
- Planned fireside discussions
- Framed teambuilding initiatives
- Metaphoric framing of daily activities

Figure 4. Social norms and alcohol training intervention model.
Previous work with peer facilitators of targeted social norms interventions has included two to three hours of training (Peeler et al., 2000; Schroeder & Prentice, 1998). A similar length training for outdoor orientation leaders is recommended, including three primary foci: introduction, misperceptions, and awareness. The introduction includes data collection to provide trainees with feedback on their own misperceptions, as well gauge the effectiveness of the training by assessing misperceptions pre and post training. In addition to the data collection, the introductory section should address the objectives of the training as well as an agreement on the purpose of the training (see APPENDIX A for a sample agreement). These sections are essential for creating “buy in” amongst the leaders and reducing any sense among the leaders that they are being trained as “disciplinarians” about alcohol use. The introduction should also explore why students have misperceptions and the sources of information they draw on to create their norms. These sources include not just their peers, but also the social context of alcohol use created by the media (movies, television, advertisements, etc.) These discussions should create a context for the rest of the training by acknowledging the reality of alcohol use by students and why outdoor orientation programs are an ideal setting to address this issue.

The section on misperceptions is a data rich presentation during which outdoor orientation leaders will learn about their own misperceptions (using the previously collected data) as well as the accurate alcohol use norms for their campus and ideally, the freshman class. This presentation is only possible if these data have been previously collected on campus. Most campuses collect these data in some format. Gathering and presenting this data is an excellent opportunity for program directors to reach out to and create connections with other offices on campus, such as the health center, alcohol
education office, or any other office interested or engaged in alcohol education. It is also important that the messages delivered during the outdoor orientation align with the messages used during the traditional on-campus orientation. Reaching out to the orientation office in order to align curricula is another useful connection for outdoor orientation programs to make. Ideally, leaders can be presented with data on both descriptive norms (i.e. quantity and frequency of alcohol use), as well as injunctive norms and the use of protective factors. Students often misperceive not just how much their peers drink, but also how strongly their peers approve of alcohol use and what protective factors their peers use when they go out.

The final training section introduces outdoor orientation leaders to an awareness of how student behavior is affected by misperceived norms. This may include a brief introduction to social norms theory (see Berkowitz, 2005 for an excellent overview) and pluralistic ignorance. Leaders should also be made aware of the risk of alienating participants when they talk about alcohol. Talking about the diversity of experience within their groups and the varying relationships students may have with alcohol in the context of the Full Value Contract is one way to address this risk. Finally, leaders should be made aware of the negative consequences associated with excessive alcohol use (Hingson et al., 2005; Presley et al., 1998).

The goal of this training is to provide outdoor orientation leaders with a set of tools they can use to discuss alcohol and alcohol norms with incoming students. These tools include a mixture of both tangible aides as well as strategies, summarized in Table 12.
Table 12.
Outdoor Orientation Leader Alcohol Discussion Tools

<table>
<thead>
<tr>
<th>Tool</th>
<th>Description</th>
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<tbody>
<tr>
<td>Leave a Trace Guide</td>
<td>The “Leave a Trace” concept was developed at Princeton University in order to “impress on our leaders that their job is to provide a positive and healthy &quot;set of footprints&quot; for incoming students to follow through college” Leaders are given information “compiled from published University sources and from information received from various University offices and departments” (Curtis, n.d.-b). This “guide” provides leaders with accurate information about a number of important topics including diversity, tolerance, alcohol, and sustainability at the University. (Available at: <a href="http://www.outdoored.com/articles/Article.aspx?ArticleID=159">http://www.outdoored.com/articles/Article.aspx?ArticleID=159</a>)</td>
</tr>
<tr>
<td>First Aiders Guide to Alcohol</td>
<td>Another resource developed at Princeton University, the First Aiders Guide to Alcohol presents the issues of severe intoxication and acute alcohol poisoning in the context and language of Wilderness First Aid. Framing intoxication this way helps outdoor orientation leaders place the severity of alcohol related issues in the same frame of reference as other medical situations which result in an altered mental status (Curtis, n.d.-a) (Available at: <a href="http://www.princeton.edu/~oa/safety/alcohol.shtml">http://www.princeton.edu/~oa/safety/alcohol.shtml</a>)</td>
</tr>
</tbody>
</table>
| Campus Resources & Policies | All campuses have one or more offices/administrators who deal directly with alcohol related issues. Leaders should be aware of the resources available to students dealing with alcohol or other substance abuse issues. These offices may include, but are not limited to:  
  - Health Center  
  - Counseling Center  
  - Alcoholics Anonymous  
  - Dean of Students Office  
  In addition, many colleges and universities have an “amnesty policy” for students who contact emergency medical services for students experiencing substance related emergencies. Leaders should know about these and other substance related policies so they can accurately convey this information to incoming students. |
| Protective factors          | A number of studies have examined the impact of protective strategies used by college drinkers (Benton, Benton, & Downey, 2006). Generally, students who engage in protective behaviors experience fewer negative consequences. Leaders should be aware of these factors and the misperceptions surrounding their use. Some strategies include (adapted from Benton et al.):  
  - Stop drinking at least 1-2 hours before going home  

<table>
<thead>
<tr>
<th>Proactive conversations</th>
<th>Reactive conversations</th>
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<tbody>
<tr>
<td>Alternate alcoholic and nonalcoholic beverages</td>
<td>Reactive conversations take place when a participant asks a question or makes a statement about alcohol use at a time when leaders are not prepared to have a proper discussion about the topic. Rather than simply letting it pass, it is important for leaders to have a range of strategies for addressing the issue either in the moment, or at a later time in a more controlled environment. This is especially relevant if the statement is particularly inaccurate or offensive. Giving leaders a chance to discuss questions/statements they have been asked, strategies they have used, and then role playing how these moments are handled are all possible methods for preparing leaders for reactive conversations.</td>
</tr>
<tr>
<td>Have a designated driver</td>
<td>Proactive conversations take place when leaders intentionally bring up the topic of alcohol use for discussion by the group. “You May Have Heard That” is a proactive conversation activity developed for the intervention used in this study. It is based on the popular “Fear in Hat” activity described by Bell &amp; Williams (2006). The activity is designed to allow participants to anonymously bring up their perceptions, or misperceptions, about topics they may feel uncomfortable asking about. A write up of this activity can be found in APPENDIX A.</td>
</tr>
<tr>
<td>Set a limit on the number of drinks you consume</td>
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<tr>
<td>Make your own drinks</td>
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<tr>
<td>Limit how much money you spend on alcohol</td>
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<tr>
<td>Only drink in safe environments</td>
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<tr>
<td>Hang out with trusted friends</td>
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<tr>
<td>Count the number of drinks you consume</td>
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<tr>
<td>Pace the number of drinks you consume per hour</td>
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</table>

Previous research on targeted, small-group social norms interventions provides a context for how large a “dose” these interventions need in order to show positive change. Peeler et al. (2000) and Schroeder & Prentice (1998) were successful using interventions as brief as 45-60 minutes. A minimum of 45 minutes of “intervention” is recommended for outdoor orientation programs that choose to discuss social norms and alcohol with participants, though it need not take place all in one session. The intervention outline
includes three phases, based loosely on Ogle’s (1986) “Know-Want to Know-Learn” instructional reading strategy.

In the “Know” phase students brainstorm what they “know” about alcohol use on campus (throughout this intervention, programs may also choose to include other topics of interest to them or their institution such as: social issues, academic issues, sexual health, diversity, etc). This is an opportunity to elicit many of the misperceptions incoming students may harbor. Ideally, leaders will keep a log of what participants think they know for use at the end of the intervention. Leaders should also be cautious about counterproductive story telling during this phase. Students may see this as an opportunity to bolster their social status by describing their previous exploits with excessive drinking. Leaders should prevent this “runaway train” by using directing questions to keep the process on track and ensuring that everyone has a chance to participate. Leaders should consider the diversity of experience with alcohol their participants may have, and use the full-value-contract as a tool to ensure that everyone remains respectful and safe during this conversation. Should the storytelling become inappropriate, leaders should be prepared to intervene with the student, letting them know they are still an important and valued member of the group, however the story is counterproductive to the goals of the program.

In the “Want to Know” phase students discuss what they’ve heard about alcohol use at college, ask questions about what they don’t know, and begin to discuss the discrepancies between their perceptions and the reality of the actual norms of alcohol use. The You May Have Heard (see APPENDIX A) activity is a useful tool for having these conversations. Again, programs have the opportunity to discuss many other important
issues in addition to alcohol use. Since this activity is anonymous, leaders may choose to introduce topics into the activity that they (or the program) find important to talk about with incoming students.

In the “learn” phase leaders present information on the actual norms of alcohol use on campus and facilitate a discussion on misperceptions and their consequences, as well as the consequences of heavy alcohol use. The Leave a Trace guide described above is an important resource for leaders during this session. By creating their own Leave a Trace guide programs can include information about the actual alcohol use norms on campus and the norms for the freshman class. The guide can also include nationwide data on the consequences of heavy alcohol use (Hingson et al., 2005), and information on the correlation of alcohol use and academic success (Berkowitz & Perkins, 1986a; Presley et al., 1998; White, Jamieson-Drake, & Swartwelder, 2002). In their article Exposing Pluralistic Ignorance to Reduce Alcohol Use Among College Students, Schroeder & Prentice (1998) included the questions they used during their social norms intervention with incoming students. Programs looking for additional conversation starters will find this a useful resource. At the end of this session, leaders should bring back the list students brainstormed during the “know” session in order to identify those that were misperceptions and ensuring that students now understand the actual norms on campus.

Facilitating a 45-minute session on social norms and alcohol use may be a challenge for many students-leaders. However, it is not necessary that all this information be delivered in one session. There are essentially four contexts in which leaders can introduce this information to their participants. Leaders may have an informal conversation about what to do on weekends in which alcohol use norms can be
introduced, or a leader may need to correct a misperception in reaction to an inappropriate comment made on the trail. At West Virginia University, leaders conduct classes around the campfire each night. Campfire discussions provide an excellent opportunity for leaders to introduce an activity like You May Have Heard in order to have a proactive conversation with the whole group. If group leaders have been trained in teambuilding initiatives, an activity could be framed to metaphorically represent the social context of alcohol use and the ways in which our misperceptions can affect our behaviors. If teambuilding is not part of a program, daily activities could be used to metaphorically represent alcohol misperceptions. Leaders could discuss how students perceived the difficulty of a hike before they had done it, and how their perceptions of the difficulty affected their attitudes and behaviors about the challenge. Outdoor orientation programs provide a wealth of opportunities for leaders to introduce the social norms and alcohol intervention described above.

In addition to providing many different opportunities and contexts for alcohol discussions to take place, the outdoor and adventure components of outdoor orientation programs contribute to the effectiveness of a social norms intervention. Bell (in press) found that the active pedagogy, intense format, and relative isolation of the outdoor orientation context led to significantly better outcomes for students in a college First Year Experience (FYE) course compared to students who took the FYE course in a traditional classroom context. These same factors support the delivery of social norms and alcohol information by increasing the proximity (Cho, 2006), saliency (Baer et al., 1991; Kallgren et al., 2000), and credibility (Berkowitz, 2005) of the social norms message.
The active pedagogy of outdoor orientation programs may help increase the saliency of the normative messages. Adventure activities can be metaphorically framed as social norms messages, which can then be reflected on and discussed amongst the group. Because outdoor orientation experiences tend to have a large impact and be memorable for participants (Gass et al., 2003), it is hoped that the “true” norms of alcohol use on campus will also be highly memorable and more cognitively available for participants once they are back on campus. The intense format, spending 24-hours per day with the group for approximately a week, may help to increase the credibility of the normative messages. Outdoor orientation leaders are an important source of information, support, and guidance both during the trip, and back on campus. As a trusted resource for incoming students, it is hoped that these leaders will be seen as a highly credible source of information about alcohol norms. Finally, the isolation of the outdoor orientation experience and the interdependence this fosters may increase the proximity of social norms messages. By discussing alcohol norms with their peers, as well as upper class leaders, it is hoped that the group will reach consensus on a moderate actual norm of alcohol use. Research suggests that more proximal norms have more influence on individual behaviors (Cho, 2006). By establishing a moderate norm amongst a highly proximal peer group, it is hoped participants will feel less pressure to drink once back on campus. Also, “hanging out with trusted friends” is one of the protective factors listed by Benton et al. (2006). Outdoor orientation groups often spend a considerable amount of time together in the early part of their first semester, a time when many first year students considerably increase their alcohol consumption (Berkley-Patton et al., 2003). Hopefully,
these peer groups will “look out for one another” on-campus in the same ways they did during outdoor orientation.

Beyond the benefits to the students themselves, the inclusion of social norms and alcohol information within an outdoor orientation may have practical implications for the survival of outdoor orientation programs themselves. Bell and Vaillancourt (in review) found that outdoor orientation programs that were discontinued often failed to “overcome the isolation inherent in the nature of any program that takes place largely away from the campus” (p. 12). In conducting this study, the researcher had contact with the Dean of Students Office, the Admissions Office, the Counseling Office, and the Judicial Office. Administrators in all of these offices were eager to assist and provide information, and excited to learn about the results of this study. The training model presented above includes information about alcohol use norms, campus policies, and many other potential topics (sexual health, diversity, sustainability, etc.). Rather than developing curricula/interventions in isolation, outdoor orientation program directors should reach out to offices on campus with expertise in these areas. Programs that reach out to other offices in this way can avoid the isolation described by Bell & Vaillancourt. In addition, programs that have a positive effect on the alcohol use and attitudes of incoming students are addressing one of the most significant issues facing colleges and universities today.

Implications for Theory and Research

The results of this study add to the literature of outdoor orientation and social norms theory. It both answers the call for increased and more formal evaluation in outdoor orientation programs (Galloway, 2000) and provides a new outcome for outdoor
orientation programs to evaluate/research. Previous research and evaluation efforts in outdoor orientation have primarily focused on one of three areas, self-constructs, academics, and social support. The addition of social norms research adds a new element to outdoor orientation research.

First-year students have been identified as a group at high risk for an increase in alcohol use and the related negative consequences. However, relatively few studies have focused on using targeted social norms interventions to address alcohol use within this group (Berkley-Patton et al., 2003; Brown, 2004; Schroeder & Prentice, 1998). Wardwell (1999), an unpublished, undergraduate thesis, is the only study to examine the effects of pre-orientation on incoming students’ use, attitudes, and perceptions of alcohol use in college. The results of the current study add support for the efficacy of targeted social norms campaigns in addressing alcohol use by first-year students, and extend the current social norms literature into a novel setting. In addition, this study answered the call for more quasi-experimental designs in social norms research (Clapp et al., 2003), as well as the need for more longitudinal designs in social norms research (Baer, 2002).

Finally, it is interesting to note the low levels of own social approval and perceptions of other students’ social approval, as well as the relative stability and small amount of pluralistic ignorance in this variable. Even at Time 4, mean social approval never rose above moderate to mild disapproval, even as quantity and frequency of use increased significantly. Perceptions of other students’ social approval never rose above the level of “would not care,” even when perceptions of other students’ quantity rose to “binge-drinking” levels. There was also relatively little self-other difference in social approval. Students did not overestimate the approval of their peers at nearly the same
magnitude that they overestimated the alcohol use of their peers. This finding may indicate that the social approval measure used in this study is not a valid measure of the injunctive norms of college student alcohol use. Alternatively, it may indicate a disconnect between students’ perceptions of descriptive norms and injunctive norms. If the latter, it may be worthwhile for colleges and universities to spend more time and effort educating students about injunctive norms, which seem to indicate students do not necessarily approve of alcohol use even though they engage in it.

**Limitations**

While every effort was made to conduct a rigorous study with limited threats to validity, the reality of researching a program in action leads to several limitations noted below.

1. The most notable of these limitations was selection bias. Although students in the OOP and OOP+ conditions were randomly assigned, students self-selected into the outdoor orientation program versus the no pre-orientation condition. Differences between the NPO and the OOP or OOP+ groups have been the result of pre-existing differences.

2. Attrition prevented the use of time-series analysis across all four sample times, therefore, matched pairs were used to examine changes between two times. This prevented direct comparisons between questions, i.e. the sample used in question one (Times 1 and 2) is not the same sample used in question two (Times 2 and 3). In addition, attrition was found to be correlated with both gender and several of the
dependent variables at Time 2 and Time 4. Due to these attrition threats, caution should be used when interpreting those results.

3. Social desirability is a risk in any study using self-reported measures of alcohol use (by far the most common approach). Typically, this threat is a concern because students (especially those under the legal drinking age) may give lower estimates of their own alcohol use. In this study, it was expected students would change their answers, in part, due to the social pressure they experienced from perceptions of their peers. While this may limit the absolute accuracy of the data collected, it does not affect the comparisons between groups or across time since all students were exposed to similar social pressure.

4. Another unknown is the level of “treatment” participants in the OOP+ group received from their leaders. Eleven of the thirteen OOP+ groups discussed alcohol during their trips, however, content of those discussions or to what extent leaders provided information consistent with the training they received is unknown. Ensuring a high level of treatment fidelity in terms of both adherence and competence would allow for a much more accurate assessment of the efficacy of this approach. OOP+ group leaders were instructed not to discuss their social norms training with their OOP group counterparts. However, the OOP group leaders were aware of the study and could have had discussions with OOP+ leaders about the study and/or the training. It is unknown to what extent diffusion of treatment or compensatory rivalry threats may have affected the results of this study.

5. Treatment fidelity is also related to program culture. Alcohol use and social norms were not a focus of this outdoor orientation program prior to this study. While efforts
were made to convey the importance of this topic and to minimize the extent to which leaders felt “forced” into including these topics on their trips, it is still possible leaders felt uncomfortable having these discussions or framing them in the context of social norms. The efficacy of this type of social norms intervention is in part reliant on the leaders “buying into” this approach, and feeling invested in these outcomes. Vlamis, Bell, & Gass’s (in review) found that program outcomes “are dependent on the program’s intent, objectives, philosophy, experiences, and focus” (p. 18).

6. Berkowitz (2005) cautioned that social norms interventions are undermined by issues of believability when some members of a community focus on negative behaviors, making the message of moderate use less believable. During the training for the OOP+ leaders, the Assistant Dean of Students in charge of judicial hearings was invited to discuss the resources available to students on campus for dealing with alcohol issues, as well as the judicial consequences of alcohol abuse, and the college’s amnesty policy for students who seek medical attention for their peers. During his presentation, the Dean announced a new policy, effectively banning all hard alcohol from campus. The rationale was that a large number of students had been transported to the emergency room in previous years, and nearly all of those transports had been the result of hard alcohol use. It is unknown to what extent this message undermined the researcher’s message of moderate normative alcohol use on campus, however this does seem consistent with the scenario described by Berkowitz. This announcement by the Dean also led to increased discussion of alcohol amongst the OOP+ and OOP leaders, most of whom were students affected by this new policy. What affect these informal discussions had on the study is unknown, however the
potential for a diffusion of treatment threat was clearly increased by these discussions.

**Future Research**

Future research on the use of social norms interventions during outdoor orientation programs should seek to improve upon several of the limitations described in the previous section. For example, tighter control of outside influences on the believability of the social norms message would be a relatively simple issue to address. Limiting attrition, and especially attrition related to the dependent variables is a more difficult problem to address, but would significantly improve the design of future studies.

The results of this study indicate outdoor orientation program leaders, especially those without any specific alcohol/social norms training, may be “carriers of the misperception” of liberal alcohol use. Perhaps the most interesting question raised by this study is the magnitude of leaders’ misperceptions and how they are transmitted to incoming students. Understanding leaders’ pluralistic ignorance across a range of schools/programs would provide important information about the need for social norms training for outdoor orientation leaders, as well as other leaders and role models who influence incoming students (e.g. resident advisors, orientation leaders, etc.). Measuring leaders’ perceptions of other students’ alcohol use and attitudes before and after training would also provide important feedback about the efficacy of training.

Future research should also examine ways to increase the adherence and the competence of the treatment. This study and the work of Wardwell (1999) indicate that outdoor orientation programs can be used to deliver social norms messages about alcohol to incoming students, and those messages can have positive effects. However, without
knowing how much and what information is passed on to incoming students, it is difficult to accurately evaluate the efficacy of these interventions. In addition, it would be beneficial to ensure that the normative messages used during outdoor orientation align with and support the messages delivered during on-campus orientation.

Previous research has suggested men and women may react differently to pluralistic ignorance (Prentice & Miller, 1993). Future research should examine whether interventions such as the one used in this study affect incoming men and women differently. It would also be useful to assess the impact of these interventions on individuals with different alcohol use histories (i.e. non-drinkers, moderate drinkers, and heavy drinkers), and on other affiliation groups such as Greek organizations.

This study looked at the effects of outdoor orientation on incoming students’ alcohol use and attitudes and their perceptions of their peers use and attitudes. Unanswered by this study is the role that wilderness/adventure plays in the shaping of these norms. Future research should compare the effectiveness of outdoor orientation versus other pre-orientations.

At pre-test, the students in the NPO group reported a higher quantity of alcohol use than students in the combined OOP group. A number of researchers (Berkowitz & Perkins, 1986a; Presley et al., 1998; White et al., 2002) have found students who drink more experience greater academic consequences such as missed classes and lower GPAs. One of the most often cited benefits associated with participation in outdoor orientation programs is increased GPA (Gass, 1986, 1987; Stogner, 1978). Future research should seek to clarify what, if any, correlation exists between alcohol use, outdoor orientation participation, and academic success.
Conclusion

Outdoor orientation programs have been shown to have positive effects on students in three primary areas: self-constructs, academic achievement, and social support. Future research into the efficacy of these programs should continue to examine these areas, and give attention to other outcomes valued by institutions of higher education, including the reduction of problematic alcohol use. This study provides a foundation for future research in this area, bringing together a theoretical basis for such interventions, a model for training program leaders, and a means of evaluating the success of similar efforts. Future efforts should refine the techniques used here in an effort to establish a culture of honest and accurate discussion about alcohol use on campus. Including social norms information designed to educate incoming students about alcohol into outdoor orientation programs is one way in which programs can overcome the isolation identified by Bell & Vaillancourt (in review) as a factor in program discontinuation.
LIST OF REFERENCES


interventions to reduce college students' heavy alcohol use. *Journal of Studies on Alcohol, 64*(4), 484-494.


APPENDICES
APPENDIX A

SOCIAL NORMS TRAINING MATERIALS
Social Norms Training Schedule - Thursday August 13th 2009

- Get leaders on your side...need buy in
- What's the best way to present this information so that it will be accepted by student leaders?
- Empower the leaders to have ownership...ask for their suggestions/input/ideas → PEOPLE OWN WHAT THEY CREATE
- Students need to have developed a level of trust before this topic can be brought up...students bringing up these topics on their own is a signal that they have developed that trust → signals that the group is doing well – “forming/norming”
- Acceptance will be the biggest hurdle to getting this to work
- How will this help their trip?
- Get a few of the older leaders bought in before the training

<table>
<thead>
<tr>
<th>Time</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>Intro to Social Norms</td>
</tr>
<tr>
<td>20</td>
<td>Hamilton Stats</td>
</tr>
<tr>
<td>15</td>
<td>What if…</td>
</tr>
<tr>
<td></td>
<td>If Hamilton were 100 people</td>
</tr>
<tr>
<td></td>
<td>If the freshman class were 100 people</td>
</tr>
<tr>
<td>10</td>
<td>Alcohol 101</td>
</tr>
<tr>
<td>20</td>
<td>College Policies and Resources</td>
</tr>
<tr>
<td>10</td>
<td>Who’s on the trail with you?</td>
</tr>
<tr>
<td>30</td>
<td>Proactive Discussions</td>
</tr>
<tr>
<td></td>
<td>Protective factors</td>
</tr>
<tr>
<td></td>
<td>Alternatives</td>
</tr>
<tr>
<td>30</td>
<td>Reactive Discussions</td>
</tr>
<tr>
<td>30</td>
<td>Schroeder Questions</td>
</tr>
<tr>
<td>185</td>
<td></td>
</tr>
</tbody>
</table>
**Proactive discussions – You may have heard**

Similar to fear in a hat activity – Focus on alcohol/drinking

1. Get a hat or other container.

2. Start with a conversation about all the different sources of information that students use to learn about college/Hamilton. I.e. Internet, peers, current students, admissions, media, etc.

3. Ask students which one’s are the most reliable, most accurate, most honest?

4. Briefly introduce pluralistic ignorance: “a belief that one’s own private thoughts and feelings are different from those of others, even though outward behavior is identical.”
   a. Classroom example
   b. Alcohol example

5. Pass out a few pieces of paper to each student, and have them complete the phrase: “You may have heard that at Hamilton…” Depending on how much time you have, students could fill out one sheet, or many.

6. Add a few of the following statements into the hat. These are statements that some students may have heard about alcohol, drinking, and college/Hamilton. Or make up a few of your own.

   You may have heard that:
   - Most students at Hamilton drink
   - Hamilton is a big party/drinking school
   - You need to drink to fit in
   - There’s nothing to do on the weekends/all winter…except drink
   - Drinking is an important part of the social scene at Hamilton

7. You don’t need to use all of these, in fact, pick a couple that you are most comfortable addressing. Also, some students may have heard these and may add them on their own.

8. Remember that as the leader you can tell, ask, facilitate, or debrief any conversation/topic. Your goal it to be honest, open, accurate, and to present all sides without glorifying any one. Remember 1/3, 1/3, 1/3.

9. Bottom line: Alcohol is a fact of life on campus. Drinking doesn’t make you a bad person, but drinking to excess does have real consequences for yourself and others.
   a. Alcohol poisoning
   b. Injury
   c. Death
   d. Academic issues
   e. Assault
   f. Sexual Abuse
   g. Unsafe sex

Like this format? You could also adapt this activity to talk about:

- Diversity
  - Racial
  - Ethnic
  - Socio-economic
- Sexuality
- Sustainability
- Academics
Social Norms Training Leader Agreement

Although we all have different opinions and experiences with alcohol, I think that we can all agree that:

• There is alcohol at Hamilton College
• Students at Hamilton exhibit a range of drinking behavior
• When talking about alcohol with incoming students, it is important to describe this range
• When talking about alcohol with incoming students, it is inappropriate to glorify any one point along this range
• Excessive drinking has negative consequences
APPENDIX B

SURVEYS
The Effects of Pre-Orientation and Orientation Programs on Social Norms

Investigating the effects of college pre-orientation and orientation programs on incoming students' attitudes about and use of alcohol.

The results of this study may be used to improve the quality of the pre-orientation and orientation programs for future Hamilton College students, as well as similar programs at other colleges and universities. Your accurate and honest responses to these questions are greatly appreciated.

General Directions

- This survey typically takes between 5 and 10 minutes to complete.
  Once you have finished, please return the survey at the front of the room.
- Please take your time and be as neat as possible.
- Please mark only ONE response to each question, unless otherwise directed.

This study is being conducted by:

Benjamin Oliver

Hamilton College Class of 2002

In partial fulfillment of the requirements for the Degree of Master of Science in Kinesiology at the University of New Hampshire

If you have any questions about this survey or this study, please feel free to ask me in person, or to contact me later at bgg7@unh.edu or 508-265-6693. THANK YOU.
The confidentiality of the information you provide is highly important.

**Do not put your name on this survey.**

Below you will create a confidential ID number will be used only to match this survey to later surveys filled out by you. Once the surveys are matched, all identifying information will be removed and destroyed.

**AT NO TIME WILL YOUR ID NUMBER BE SHARED WITH ANYONE AT HAMILTON COLLEGE. NOR WILL ANY OF THE INFORMATION YOU PROVIDE BE USED TO IDENTIFY YOU INDIVIDUALLY.**

In the first two boxes please write the 2-digit day of your birth. I.e. if you were born on January 3rd, write 03. If you were born on October 12th, write 12. In the last four boxes please write the last four digits of your student ID number (found on the front of your Hill Card). For example, if you were born on February 5th, and your student ID number was 3116287, then your ID number would be 056287.

YOUR ID NUMBER:

<table>
<thead>
<tr>
<th>Day of birth</th>
<th>Last 4 digits of your Student ID</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Again, this number will only be used to match your pre and post tests. This number will never be used to identify you personally, or be published in any way.
1) Did you participate in a pre-orientation program prior to orientation week (i.e. Urban Service Experience, Adirondack Adventure, Higher Education Opportunity Program)?

<table>
<thead>
<tr>
<th></th>
<th>YES ☐</th>
<th>NO ☐</th>
</tr>
</thead>
</table>

2) If YES, which one?

<table>
<thead>
<tr>
<th></th>
<th>1) USE ☐ Please specify trip:</th>
<th>2) AA ☐ Please specify trip:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3) HEOP ☐ Please specify:</td>
<td>4) Other ☐ Please specify:</td>
</tr>
</tbody>
</table>

Questions that ask about other students are referring to students at Hamilton College.

* A drink is a bottle of beer, a glass of wine, a wine cooler, a shot of liquor, or a mixed drink.

3) Please place an X in the box that best corresponds to your level of agreement with each of the following statements.

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Moderately Disagree</th>
<th>Mildly Disagree</th>
<th>Neither Agree nor Disagree</th>
<th>Mildly Agree</th>
<th>Moderately Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Most of my close friends think it is okay for me to drink alcohol</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Most students at Hamilton think it is okay to drink alcohol</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Most of my high school friends that I hang out with think it is okay to drink alcohol</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>My parents think it is okay for me to drink alcohol</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>My siblings think it is okay for me to drink alcohol (Check here ☐ if you have no siblings)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

4) Please place an X in the box that best corresponds to your level of agreement with each of the following statements.

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Moderately Disagree</th>
<th>Mildly Disagree</th>
<th>Neither Agree nor Disagree</th>
<th>Mildly Agree</th>
<th>Moderately Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>It is important for me to do what my close friends want me to do</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>It is important for me to do what most Hamilton students want me to do</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>It is important for me to do what most of my high school friends want me to do</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>It is important for me to do what my parents want me to do</td>
<td>☐</td>
<td>☐</td>
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<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>It is important for me to do what my siblings want me to do (Check here ☐ if you have no siblings)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
5) **How much do you approve of the following?**

<table>
<thead>
<tr>
<th>Action</th>
<th>Strong Disapproval</th>
<th>Moderate Disapproval</th>
<th>Mild Disapproval</th>
<th>Wouldn't Care</th>
<th>Mild Approval</th>
<th>Moderate Approval</th>
<th>Strong Approval</th>
</tr>
</thead>
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<tr>
<td>Drinking alcohol every weekend</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Drinking alcohol daily</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Driving a car after drinking</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Drinking enough alcohol to pass out</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>

6) **If you did the following, how do you think your friends would respond if they knew?**

<table>
<thead>
<tr>
<th>Action</th>
<th>Strong Disapproval</th>
<th>Moderate Disapproval</th>
<th>Mild Disapproval</th>
<th>Wouldn't Care</th>
<th>Mild Approval</th>
<th>Moderate Approval</th>
<th>Strong Approval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drank alcohol every weekend</td>
<td>□</td>
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</tr>
<tr>
<td>Drank alcohol daily</td>
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<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Drove a car after drinking</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Drank enough alcohol to pass out</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>

7) **If you did the following, how do you think Hamilton students in general would respond if they knew?**

<table>
<thead>
<tr>
<th>Action</th>
<th>Strong Disapproval</th>
<th>Moderate Disapproval</th>
<th>Mild Disapproval</th>
<th>Wouldn't Care</th>
<th>Mild Approval</th>
<th>Moderate Approval</th>
<th>Strong Approval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drank alcohol every weekend</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Drank alcohol daily</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Drove a car after drinking</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Drank enough alcohol to pass out</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>
8) How many alcoholic drinks, on average, do you think each of the following students typically consumes at parties and bars? (A drink is a bottle of beer, a glass of wine, a wine cooler, a shot glass of liquor, or a mixed drink.)

(Circle the answer corresponding to your best estimate of the average number of drinks consumed by each category of students on one of these occasions.)

<table>
<thead>
<tr>
<th>Category</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15+</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Yourself</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>b. Your friends</td>
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<tr>
<td>c. Students in general</td>
<td></td>
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</tr>
</tbody>
</table>

9) How often do you think students in each of the following categories typically consume alcohol (including beer, wine, liquor, wine coolers, and mixed drinks)?

Just give your best estimate for each category.

(Place an X in the box corresponding to the best answer for each category of students.)

<table>
<thead>
<tr>
<th>Category</th>
<th>Never</th>
<th>1-2 times/year</th>
<th>6 times/year</th>
<th>1-2 times/month</th>
<th>Twice a month</th>
<th>Once a week</th>
<th>Twice a week</th>
<th>5 times a week</th>
<th>Every day</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Yourself</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Your friends</td>
<td></td>
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<td></td>
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<td></td>
<td></td>
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<tr>
<td>c. Students in general</td>
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<td></td>
</tr>
<tr>
<td>10) Do you intend to join a Greek organization (Fraternity/Sorority) during college? (Please place an X in the box corresponding to your best estimate.)</td>
<td>Yes</td>
<td>No</td>
<td>Don't know</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>11) At what age did you have your first drink of alcohol (beer, wine, liquor)? (Please place an X in the box corresponding to your best estimate.)</th>
<th>Have not used</th>
<th>10-11</th>
<th>12-15</th>
<th>16-17</th>
<th>18-20</th>
<th>21-25</th>
<th>26+</th>
</tr>
</thead>
<tbody>
<tr>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>12) Age (in years):</th>
<th></th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>13) Sex:</th>
<th>Male</th>
<th>Female</th>
<th>Other</th>
</tr>
</thead>
</table>

| 14) Ethnicity (select one or more by placing an X in the box(es) that best describe you): |
|---|---|---|---|---|
| 1) American Indian or Alaska Native | 2) Asian | 3) Black or African American | 4) Hispanic or Latino | 5) Native Hawaiian or Other Pacific Islander | 6) White/Caucasian |
| | | | | | |
ADIRONDACK ADVENTURE LEADER FOLLOW UP SURVEY

PLEASE ANSWER THE FOLLOWING QUESTIONS AS ACCURATELY AND HONESTLY AS POSSIBLE. IF YOU HAVE ANY QUESTIONS, PLEASE FEEL FREE TO ASK.

1) What trip did you lead? ________________________________

2) Was alcohol use discussed on your trip? □ Yes □ No

If yes, who brought it up? □ You/your co-leader? □ One of your participants? □ Other (specify__________)

2b) Estimate how much time (in minutes) was spent having discussions about alcohol with your participants during the program. ____________

2c) When did these conversations take place? (i.e. meal times, on trail, at night, etc.) Please give as much detail as possible. ________________________________

2d) Where did the topic come up? □ On campus □ In the woods □ At the ropes course □ Other (specify)________

3) Did you participate in the social norms training at the start of AA? □ Yes □ No

If you replied Yes to question 3, answer questions 4-9, if No, skip to question 10.

4) Did you engage in any reactive discussions about alcohol? □ Yes □ No

If yes, please describe: ________________________________

5) Did you engage in any proactive discussions about alcohol? □ Yes □ No

If yes, please describe: ________________________________

6) Was the social norms training you received useful when talking to your participants about alcohol? □ Yes □ No

If yes, please give an example(s): ________________________________

7) What aspects of the training were most useful? Which were the least useful?

8) Did you detect any evidence of pluralistic ignorance (i.e. self-other differences/misperceptions) in your participants?

9) If yes, do you feel like there was any change in their misperceptions?
If you answered No to question 3, answer questions 10-12.

10) Did you feel prepared to answer/respond to the questions/statements that were raised about alcohol?  
☐ Yes  ☐ No

11) If yes, what sources of information, training, resources did you use to address their questions?

12) If not, what information would you have liked to have had to better respond to questions/statements about alcohol?
APPENDIX C

PERMISSION LETTERS
September 25, 2008

To Whom It May Concern:

Provided by the laws of the United States (title 17, U.S. Code) to the authors of original works of authorship and the exclusive rights under Section 106 of the 1976 Copyright Act, the Core Institute authorizes Benjamin Moore to do the following:

- To reproduce the work in copies.
- To prepare derivative works based upon the copyrighted work.
- To display the copyrighted work within his master's thesis.

Permission applies to the:

- Campus Survey of Alcohol and Other Drug Norms
  - Questions 1a, 1b, 1c, 1d, 1e, 1h, 1i, 4, 5, 6, 7a, 7b, 7c, 7d, 7e, 7h, 7i, 8a, 8b, 8c, 8d, 10, 11, 16, 17a, 17b, 17c, & 17d.

Limitations of the permission are:

- Permission applies only to scholarly work.

If you have any questions or need additional information please do not hesitate to call. I can be reached at 618.453.4420.

Sincerely,

Laura A. Rowald, Ph.D.
Researcher III, Core Institute

It is illegal for anyone to violate any of the rights provided by the copyright law to the owner of copyright. These rights, however, are not unlimited in scope. Sections 107 through 121 of the 1976 Copyright Act establish limitations on these rights. In some cases, these limitations are specified exemptions from copyright liability. One major limitation is the doctrine of "fair use." which is given a statutory basis in section 107 of the 1976 Copyright Act. In other instances, the limitation takes the form of a "comparatory license" under which certain limited uses of copyrighted works are permitted upon payment of specified royalties and compliance with statutory conditions. For further information about the limitations of any of these rights, consult the copyright law or write to the Copyright Office.

Laura A. Rowald, Ph.D.
Researcher III, Core Institute

Core Institute
Student Health Center
Building Q209 - Mailcode 6740
Southern Illinois University
374 East Grand Avenue
Carbondale, IL 62901
Phone: 618.536.4366
Fax: 618.536.4405
www.siu.edu/~coreinst
Hi Benjamin. Sure, you may use these measures. You will need to contact Lee directly of course, for her measures. best - John Baer.

---

From: Benjamin Moore [mailto:ben.moore@unh.edu]
Sent: Tue 3/31/2009 10:48 AM
To: John Baer
Subject: social norms survey questions

Dear Dr. Baer,

I am a graduate student at the University of New Hampshire studying social norms in the context of college outdoor orientation programs. I have been reviewing the social norms literature looking for measures of injunctive norms to use in my masters thesis. I recently read the 1984 paper you wrote titled "Effects of College Residence on Perceived Norms for Alcohol Consumption", as well as a 2007 paper by Lee, et al. titled "Social motives and the interaction between descriptive and injunctive norms in college student drinking." I am interested in the measure that you used for measuring perceptions of approval of social drinking, as well as the variations that Lee et al. used in their study. I wanted to ask if you would grant me permission to use some version of your question as part of my masters thesis? I will, of course, cite you as the original source of the questions.

Thank you so much for your time,

Ben Moore
Hi Ben,

Please feel free to use the adapted measure we discussed.

How much do you approve of the following:

- How much do you think your closest friends would respond if they knew you...
- How would your friends respond if they knew you...

I would go with: How do you think your closest friends would respond if they knew you...

Good luck with your research, it sounds incredibly interesting.

Best,
Christine

PS - will you be getting norms for the typical college student at u.w. university also?

----- Original Message -----  
From: "Christine Lee"<lecim@u.washington.edu> 
Subject: Re: question about injunctive norms 
Date: April 1, 2009 9:01:58 PM EDT 
To: "Benjamin Moore"<ben.moore@unh.edu> 

Hi Ben,

Please feel free to use the adapted measure we discussed.

How much do you approve of the following:

- How much do you think your closest friends would respond if they knew you...
- How would your friends respond if they knew you...

I would go with: How do you think your closest friends would respond if they knew you...

Good luck with your research, it sounds incredibly interesting.

Best,
Christine

----- Original Message -----  
From: Benjamin Moore 
To: Christine Lee 
Sent: Tuesday, March 31, 2009 10:39 AM 
Subject: Re: question about injunctive norms 

Hello Dr. Lee,

Thanks so much for your reply. My thesis committee is quite concerned that I use items that have established reliability and validity, and they prefer, when possible, that I word the questions as close as possible to the original source.

Based on your paper, as well as Dr. Baer's, I have put together the two questions that are attached to this email. If you could take a look at these and let me know if they are similar to your questions, or if you have used a different wording, that would be incredibly helpful.

Also, just to be certain, can I take it from your response that you approve of my using these questions in my survey?

Thanks so much,
Ben Moore

----- Original Message -----  
From: Benjamin Moore 
To: lecim@u.washington.edu 
Sent: Tuesday, March 17, 2009 11:44 AM 
Subject: question about injunctive norms 

Hello Dr. Lee,

I am a graduate student at the University of New Hampshire studying social norms in the context of college outdoor orientation programs. I have been reviewing the social norms literature looking for measures of injunctive norms to use in my masters thesis. I recently read the 2007 paper you co-wrote titled "Social motives and the interaction between descriptive and injunctive norms in college student drinking."
APPENDIX D

LETTER FROM DEAN THOMPSON
April 15, 2009

To Whom It May Concern,

Please accept this letter on behalf of Hamilton College in support of a study entitled, "Exploring the Role of Wilderness Pre-Orientation Programs in Reducing Pluralistic Ignorance" to be conducted by Benjamin Moore between the dates of August 11th and December 18th, 2009. This research will investigate the attitudes toward, and use of, alcohol by the Class of 2013, and specifically how the college's pre-orientation and orientation programs affect those attitudes. All involved are hopeful that the results of this study will aid the college in enhancing the effectiveness of its pre-orientation and orientation programs.

The college recognizes that the accuracy and utility of this research is dependent on the open and honest responses given by participants. As such, the college seeks to assist Mr. Moore in maintaining the privacy of all participants and the confidentiality of their responses. We further recognize that some participants may be concerned that the information they provide could be linked to them as an individual, and used in an investigative or punitive manner by the college.

In my position as Dean of Students, I want to assure all parties involved with this study that no representative of Hamilton College acting in his/her official capacity will request or try to obtain/access any of the individual/raw data collected as part of this study, nor try to determine who participated in the study.

Please do not hesitate to contact me with any questions regarding Hamilton's support for this research.

Sincerely,

Nancy Y. Thompson
Dean of Students

NRT/egr
APPENDIX E

PSYCHDATA.COM PRIVACY & SECURITY POLICIES
Security Statement

Overview
PsychData provides superior online research services to the social science community. A critical component of this goal is ensuring the security of each researcher's data. PsychData is specifically designed to meet and exceed industry standards for Internet security as well as HIPAA standards for the protection of research participants. Our servers, database, and web presence employ multiple layers of enterprise-level security features to accomplish these goals. Interested parties will find the details of our security statement below.

We actively foster an open dialogue with interested parties in order to continuously improve our services.

Server Infrastructure
Our servers are housed in a secure data facility and are monitored 24 hours-per-day and 7 days per week by network operations personnel for all aspects of operational security. Biometric/fingerprint sensors, card readers, personal identification numbers, and environmental sensors are used to ensure server integrity and security. Redundant HVAC systems ensure an optimized operational environment. Server power is provided by a redundant, multi-stage, uninterruptible system. Even in the event of a catastrophic commercial power failure, diesel generators seamlessly provide backup power. A redundant, high-bandwidth, private transport network provides connectivity between our servers and the world. The local area network connectivity is redundant with three fiber rings with dual entry points from Optical Carrier-12 (OC-12) hardware. This network has demonstrated 99.999% availability, which means that the network will be down no more than 5 minutes in one year.

Enterprise-Level Database Architecture
PsychData utilizes a robust, centralized, and enterprise-level SQL Server database that is easily capable of handling millions of records and multiple concurrent users. All database transactions utilize T-SQL stored procedures for increased database security and efficiency. In addition, our database has been carefully constructed to achieve architecture efficiency and conform to the normal NIST form (NFP).

Server Operating System
All servers must use same form of software "platform" in order to operate. PsychData servers are powered by Windows Server 2003 and utilize Internet Information Services (IIS) v6.0. Microsoft Windows Server 2003 is considered to be as secure or more secure than Apache and Linux/Unix platforms. Our servers are professionally administered, updated with the latest security patches and closely monitored at all times.

Secure Socket Layer (SSL) 128-bit Encryption
In order to protect data and other sensitive information during transit from our web pages to our database, we utilize Secure Socket Layer (SSL) 128-bit encryption technology. For many years, Internet-based credit card transactions have been successfully protected by SSL, which utilizes state-of-the-art SSL encryption algorithms. Data is encrypted at the instant that a user submits it and can only be decrypted by the target server. PsychData has been granted an SSL certificate from Verisign, the industry leader in SSL technology.

Summary
PsychData has been carefully designed to provide superior online research services to the social science community in a secure setting. The security of our systems and our member's data is our top priority. If you have a question or concern about the safety of online research, we encourage you to contact us to find out more.
APPENDIX F

CONSENT FORMS
CONSENT FORM FOR PARTICIPATION IN A RESEARCH STUDY

TITLE OF RESEARCH STUDY
"Exploring the role of wilderness pre-orientation programs in reducing pluralistic ignorance" is a study being conducted by Ben Oliver, an alumnus of Hamilton College, as a part of his graduate work at the University of New Hampshire.

WHAT IS THE PURPOSE OF THIS STUDY?
The purpose of this study is to examine the effects of pre-orientation and orientation programs on incoming students understanding of, and attitudes towards, the social norms of alcohol use on campus.

WHAT DOES YOUR PARTICIPATION IN THIS STUDY INVOLVE?
If you elect to participate in this study, you will be asked to complete an 11-question survey, as well as provide demographic information including your age, sex, and ethnicity. In addition, you will be asked to generate a six-digit ID number that will be used by the researcher for the sole purpose of matching earlier responses with later ones. This ID number will be kept completely confidential by the researcher, and will be erased from all records after all data has been collected and matched.

You will be asked to complete the survey at four different times during your first semester of college; August 14th, August 22nd, August 26th, and on or about December 1st. Each survey will take approximately 5-10 minutes to complete.

WHAT ARE THE POSSIBLE RISKS OF PARTICIPATING IN THIS STUDY?
There are no known physical risks associated with participation in this study. However, there is a small possibility you may feel some discomfort while answering questions related to your use of, or attitudes towards alcohol.

WHAT ARE THE POSSIBLE BENEFITS OF PARTICIPATING IN THIS STUDY?
Participation in this study will assist in enhancing the college's knowledge of the effectiveness of its pre-orientation and orientation programs. Further, the results of this study may be used to develop training and programs that will enhance pre-orientation and orientation programs at other colleges and universities.

IF YOU CHOOSE TO PARTICIPATE IN THIS STUDY, WILL IT COST YOU ANYTHING?
There are no costs associated with participation in this study.

WILL YOU RECEIVE ANY COMPENSATION FOR PARTICIPATING IN THIS STUDY?
If you complete the first three rounds of data collection you will be entered into a raffle to win one of several small prizes from the Hamilton College bookstore (sweatshirts, hats, etc.). If you complete all four rounds of data collection you will be entered into a raffle to win a $200 gift certificate to the bookstore.
WHAT OTHER OPTIONS ARE AVAILABLE IF YOU DO NOT WANT TO TAKE PART IN THIS
STUDY?

You understand that your consent to participate in this research is entirely voluntary,
and that your refusal to participate will involve no prejudice, penalty or loss of
benefits to which you would otherwise be entitled.

CAN YOU WITHDRAW FROM THIS STUDY?

If you consent to participate in this study, you are free to stop your participation in the
study at any time without prejudice, penalty, or loss of benefits to which you would
otherwise be entitled.

HOW WILL THE CONFIDENTIALITY OF YOUR RECORDS BE PROTECTED?

The researcher seeks to maintain the confidentiality of all data and records associated
with your participation in this research.

You should understand, however, there are rare instances when the researcher may
be required to share personally-identifiable information (e.g., according to policy,
contract, regulation). For example, in response to a complaint about the research,
officials at the University of New Hampshire, designees of the sponsor(s), and/or
regulatory and oversight government agencies may access research data.

All survey responses will be kept in locked storage when not in use by the researcher.
Only the researcher and his faculty advisors will have access to the surveys. Once all
data is collected and entered, all personally identifiable information will be deleted and
destroyed. All results will be reported anonymously. At no time will any information be
reported that could be linked to a specific student.

To further protect the confidentiality of all participants, the researcher has obtained a
signed letter from the Dean of Students at Hamilton College supporting the research
and guaranteeing that no representative from the college will ever request any
identifying information from this study. To request a copy of this letter, please contact
the researcher at bgg7@unh.edu.

WHOM TO CONTACT IF YOU HAVE QUESTIONS ABOUT THIS STUDY

If you have any questions pertaining to this research you can contact (Benjamin Oliver
at 508-265-6693, or bgg7@unh.edu) to discuss them.

If you have questions about your rights as a research subject you can contact Julie
Simpson in the UNH Office of Sponsored Research, 603-862-2003 or
Julie.simpson@unh.edu, or Dr. Jennifer Borton in the Hamilton College Department of
Psychology, 315-859-4693 or jborton@hamilton.edu to discuss them.

I, ____________________________ CONSENT/AGREE to participate in this research study

_________________________________________          ____________
Signature of Subject                                Date

2
CONSENT FORM FOR PARTICIPATION IN A RESEARCH STUDY

TITLE OF RESEARCH STUDY
"Exploring the role of wilderness pre-orientation programs in reducing pluralistic ignorance" is a study being conducted by Ben Oliver, an alumnus of Hamilton College, as a part of his graduate work at the University of New Hampshire.

WHAT IS THE PURPOSE OF THIS STUDY?
The purpose of this study is to examine the effects of pre-orientation and orientation programs on incoming students understanding of, and attitudes towards, the social norms of alcohol use on campus.

WHAT DOES YOUR PARTICIPATION IN THIS STUDY INVOLVE?
If you elect to participate in this study you will be asked to complete a brief survey at the end of the program concerning how often and to what extent the topics of alcohol use, partying, social life, etc. were discussed on your trip. You will also be asked to what extent, if any, the training you received was useful to you in having those conversations. You may also be asked follow up questions by the researcher to better understand the nature of your experience in dealing with the topic of alcohol use as it came up during your trip. Data collection will only take place during program time (i.e. trainings, during Adirondack Adventure, or debriefs). No information will be collected during off-hours. The researcher will inform you verbally before any information is collected for use in this study.

The information collected will only be used to help the researcher understand differences in the data collected from participants on the Adirondack Adventure program. The data collected will in no way be used to evaluate your performance as a leader. All data will be collected anonymously.

Your participation in this study will take place between the dates of August 11th and 21st, 2009. During this time, you will only be asked to provide information about your experience during program hours (i.e. training, programming, and debriefs). If it becomes necessary to conduct follow up data collection, the researcher will contact you to set up a specified time to follow up.

WHAT ARE THE POSSIBLE RISKS OF PARTICIPATING IN THIS STUDY?
There are no known physical risks associated with participation in this study. However, there is a small possibility you may feel some discomfort while answering questions related to your experience as an Adirondack Adventure leader.

WHAT ARE THE POSSIBLE BENEFITS OF PARTICIPATING IN THIS STUDY?
Participation in this study will assist in enhancing the college's knowledge of the effectiveness of its pre-orientation and orientation programs. Further, the results of this study may be used to develop training and programs that will enhance pre-orientation and orientation programs at other colleges and universities.

IF YOU CHOOSE TO PARTICIPATE IN THIS STUDY, WILL IT COST YOU ANYTHING?
There are no costs associated with participation in this study.
WILL YOU RECEIVE ANY COMPENSATION FOR PARTICIPATING IN THIS STUDY?
There is no compensation for participation in this study. You may request a copy of the final product of this research by contacting the researcher at bbg7@unh.edu.

WHAT OTHER OPTIONS ARE AVAILABLE IF YOU DO NOT WANT TO TAKE PART IN THIS STUDY?
You understand that your consent to participate in this research is entirely voluntary, and that your refusal to participate will involve no prejudice, penalty or loss of benefits to which you would otherwise be entitled.

CAN YOU WITHDRAW FROM THIS STUDY?
If you consent to participate in this study, you are free to stop your participation in the study at any time without prejudice, penalty, or loss of benefits to which you would otherwise be entitled.

HOW WILL THE CONFIDENTIALITY OF YOUR RECORDS BE PROTECTED?
The researcher seeks to maintain the confidentiality of all data and records associated with your participation in this research.

You should understand, however, there are rare instances when the researcher may be required to share personally-identifiable information (e.g., according to policy, contract, regulation). For example, in response to a complaint about the research, officials at the University of New Hampshire, designees of the sponsor(s), and/or regulatory and oversight government agencies may access research data.

All survey responses will be kept in locked storage when not in use by the researcher. Only the researcher and his faculty advisors will have access to the surveys. All results will be reported anonymously. At no time will any information be reported that could be linked to a specific individual.

To further protect the confidentiality of all participants, the researcher has obtained a signed letter from the Dean of Students at Hamilton College supporting the research and guaranteeing that no representative from the college will ever request any identifying information from this study. To request a copy of this letter, please contact the researcher at bbg7@unh.edu.

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I, __________________________ CONSENT/AGREE to participate in this research study

Signature of Subject __________________________ Date __________________________
Social Norms Research Notification and Withdrawal Form

Dear Parent or Guardian,

As part of the Class of 2013, students will be asked to take part in a research study being conducted at Hamilton College to better understand how the college's pre-orientation and orientation programs affect the social norms of alcohol use on campus. This is an important study that will enhance the college's understanding of the effectiveness of its pre-orientation and orientation programs.

This study is being conducted by Benjamin Oliver, an alumnus of Hamilton College, as part of his graduate work at the University of New Hampshire, for the degree of Master of Science in Kinesiology.

Please read this form for information about the survey, and for instructions on how to withdraw your child from the study if you choose to opt out of this research.

If you do not want your child to complete the survey, please notify the researcher.

Survey Content: Students who participate in this study will be asked to complete an eight-question survey assessing their attitudes towards, and use of, alcohol, as well as their perceptions of their peers attitudes and use. In addition, students will be asked about their age, gender, and ethnicity.

Students will also generate a six-digit ID number that will be used by the researcher for the sole purpose of matching their earlier responses with their later ones. This ID number will be kept completely confidential by the researcher, and will be erased from all records after all data has been collected and matched.

You may request a copy of the questionnaire by contacting the researcher at bgg7@unh.edu.

It is Voluntary: Students do not have to take the survey. Students who do participate only have to answer the questions they want to answer, and they may stop taking it at any time. Withdrawal from, or refusal to participate in, this study by you or your child will involve no prejudice, penalty or loss of benefits to which you or your child would otherwise be entitled.

It is Confidential: All survey responses will be kept in locked storage when not in use by the researcher. Only the researcher and his faculty advisors at the University of New Hampshire will have access to the surveys. Once all data is collected and entered, all personally identifiable information will be deleted and destroyed. All results will be reported anonymously, but this data, like hospital records, could be turned over to an authority in the rare case of subpoena or court order.

To further protect the confidentiality of all participants, the researcher has obtained a signed letter from the Dean of Students at Hamilton College stating that no representative from the college will ever request any identifying information from this study. This letter is available upon request; please contact the researcher at bgg7@unh.edu.

Administration: Students will be asked to compete the survey at four different times during their first semester of college; August 14th, August 22nd, August 26th, and on or about December 1st. Each survey will take approximately 5-10 minutes to complete.
Potential Risks: There are no known physical risks associated with participation in this study. However, there is a small possibility some students may feel some discomfort while answering questions related to their use of, or attitudes towards alcohol.

For Further Information: The survey was developed by Benjamin Oliver, an alumnus of Hamilton College, and a graduate student at the University of New Hampshire, under the guidance of a three-member thesis committee. In addition, this study was reviewed and approved by the Institutional Review Boards at both Hamilton College and the University of New Hampshire. If you have any questions pertaining to this research you can contact Benjamin Oliver (508-265-6693, or bgg7@ unh.edu) to discuss them.

If you have questions about your child’s rights as a research subject you can contact Julie Simpson in the UNH Office of Sponsored Research (603-862-2003, or julie.simpson@unh.edu), or Dr. Jennifer Borton in the Hamilton College Department of Psychology (315-859-4693, or jborton@hamilton.edu) to discuss them.

If you do not want your child to participate, please contact:

Benjamin Oliver via email, telephone, or mail (no later than July 31, 2009) at:

bgg7@unh.edu

508-265-6693

128 Main St. Durham, NH 03824

If withdrawing your child by mail, please return this form to Benjamin Oliver at 128 Main St. Durham, NH 03824 no later than July 31, 2009.

Withdrawal Form for the Social Norms Research Survey

By returning this form, I do not give permission for my child to participate in the Social Norms Research survey.

(Please Print) My child’s name is: __________________________________________

Signature: __________________________________________________________________

Date: ____________________________________________________________________
APPENDIX G

IRB APPROVAL
1. INTRODUCTION

Alcohol use by undergraduate students is a concern for college and university administrators (Prentice & Miller, 1993). Alcohol use by college students has been linked with numerous negative consequences such as, lower academic performance, more frequent trouble with authority, and difficulties in personal relationships (Perkins & Berkowitz, 1986). A growing number of studies (e.g., Perkins & Berkowitz, 1986; Perkins & Wechsler, 1996; Prentice & Miller, 1993; Stoffman, 1999; Treckel, Williams, & Reis, 2003) have shown that perceptions of alcohol use by one’s peers is one of the most consistent predictors of one’s own alcohol use (Schoedr & Prentice, 1998). The “social norms approach” is based on the premise that students’ tend to overestimate campus norms about alcohol; in other words, students believe that their peers are more permissive of drinking alcohol and drink alcohol more than they really do. This causes students to publicly support and engage in behavior that they do not privately support. Social norms interventions attempt to reduce students’ misperceptions of alcohol norms, which in turn should lead to more moderate use of and attitudes regarding alcohol.

Gass (1999) suggests that placing incoming students in adventurous environments may be an effective way to reduce discrepancies between students’ expectations of college and the reality of campus life. Wardwell (1999) found that students who participated in an outdoor orientation trip experienced reductions in their misperceptions about social fit and desire to party. This study will build upon the work of Wardwell by applying a targeted social norms intervention with the goal of correcting students’ misperceptions of alcohol use on campus, and testing to see if reductions in misperceptions are associated with less alcohol use.

Preparing students to succeed in the college environment and educating them about the responsible use of alcohol are major concerns of every institution of higher education. The results of this study have the potential to support college and university efforts to reduce problematic drinking and promote student success.

2. SPECIFIC AIMS

The specific goal of this study is to investigate the effect of outdoor orientation programs on the normative beliefs of incoming students regarding alcohol, and whether changes in those beliefs lead to changes in drinking behavior. To better achieve this goal, five research questions will be examined:

1. Does participation in an outdoor orientation program reduce students’ pluralistic ignorance about alcohol attitudes and use?
2. Does participation in the traditional on-campus orientation reduce students’ pluralistic ignorance about alcohol attitudes and use?
3. Is there an interaction between outdoor-orientation and on-campus orientation that affects students’ normative beliefs about alcohol attitudes and use?
4. After one semester of college, do students who participated in the OOP report less alcohol use than students who did not?
5. Does additional social-norms & alcohol awareness training for OOP leaders contribute to reductions in incoming students’ pluralistic ignorance about alcohol use and attitudes, and does this result in less alcohol use by those incoming students?
6. To collect qualitative and quantitative information from leaders in order to better understand any differences that may be found between the three groups participating in the different pre-orientation and orientation programs.

3. RESEARCH PROTOCOL

a. Freshman participants in this study will be the entering first-year class (n=480) from a small, private, liberal-arts college located in upstate New York. Participants will be recruited in person, by the researcher, on the first day of their wilderness pro-orientation program (August 14, 2009) and on the first day of on-campus orientation (August 22, 2009). As compensation for participation, students will be offered the chance to win prizes (Hamilton sweatshirts, gift cards, etc.) via random drawing, if they complete all four rounds of the survey. Leader participants will be the student, alumni, and staff leaders of the Outdoor Orientation program at Hamilton College. They will be recruited in person, by the researcher, during the program debrief at the end of the outdoor orientation program. They will not be compensated for their participation.

b. Incoming students who choose to participate will be asked to complete a 14-questions survey a total of 4 times during the course of their first semester of college (August 14th, August 22nd, August 26th, and early December). The first three surveys will be paper and pencil surveys, administered in person, by the researcher. The final survey will be an online version hosted by Psychdata.com (see attached information regarding the security policies for psychdata.com). Leader participants will be asked to complete a brief survey assessing whether alcohol was discussed on their trip, and if so, to describe the length and nature of those discussions (see attached sample questions). In addition, the researcher will follow up with the leaders in a group setting to collect additional qualitative information about how alcohol was discussed during their trips (see attached sample questions).

c. The researcher will stress during the recruitment period (for incoming students) that participation is voluntary and that non-participation will not affect their status at the college in any way. Students who choose to participate in this study will be given a consent form (see attached) that describes the study in more detail and reinforces the voluntary nature of their participation, and their right to discontinue their participation at any time.
It is estimated that between 20-100 incoming freshman will be under 18 years of age at the start of the study. Due to the nature of the study (minimal physical risk) and the very narrow age difference (typically a few months) between ‘minors’ and ‘adults’ in this study, a parental notification letter and passive consent form (see attached) will be used to obtain consent from the parents/guardians of the minors participating in this study. The letter will explain the study and ask parents/guardians to reply only if they DO NOT WISH their child to participate in this study. Students whose parents/guardians opt them out of the study will be identified by the researcher and will not complete the survey. Minors who do participate will complete the same consent form at the start of the study as the adult students.

For leader participants, the researcher will inform all participants that their participation is voluntary and that they may end their participation at any time. The researcher will also set clear boundaries for when data can be collected (i.e. only during program time, and always after clear indication has been given by the researcher that a discussion is “on the record”). All leader participants will be asked to complete a consent form that documents the details of their participation, and explains their rights as a participant (see attached).

d. Benjamin (Moore) Oliver is the primary investigator for this study. Ben is a graduate student in the Department of Kinesiology with a focus in Outdoor Education. He has been involved with outdoor orientation programs since 1999, and has been preparing for this study on social norms and alcohol use for the last 18 months.

Ben will be supervised by Professors Michael Gass and Brent Bell from the Department of Kinesiology, and Professor Anita Tucker from the Department of Social Work.

4. DATA

All data analyses will be performed using Statistical Package for the Social Sciences 16 (SPSS) statistics software. After all data is coded and entered into SPSS responses will be matched using the identification information provided by students (day of the month of birth and last four digits of student ID). Any responses that are not complete across all four sets will not be included for analysis.

The primary unit of analysis in this study is pluralistic ignorance (PI). Pluralistic ignorance will be calculated for three of the four constructs measured in this study: quantity of alcohol consumed (question 8), frequency of alcohol use (question 9), and social approval (questions 5-7). PI is calculated by subtracting self-reported averages from the averages for the “your friends” and “students in general” referent groups. Once PI scores are calculated, a repeated measures ANOVA will be used to test for changes in pluralistic ignorance between groups and across time.

Theory of Reasoned Action (TRA) scores will be calculated by finding the product of each of the five questions pairs (questions 1-2), and then taking the average of those five products. Mean TRA scores will then be analyzed using repeated measures ANOVA to look for changes in TRA scores across time.

Alcohol use will be self-reported by students in terms of both how often students drink, as well as what quantity of alcohol students drink in a week. At A simple ANOVA will be used to look for differences in alcohol use between the three groups at the end of their first semester.

The use of ANOVA to analyze the results will allow a comparison of differences between students who participated in the outdoor orientation program (with and without social norms training for leaders), and those who did not. Results will be reported in aggregate for each of the three study groups.

Data collected from the leaders will be analyzed using descriptive statistics and t-tests to look for differences between groups in terms of the quantity and frequency with which alcohol was discussed. Data from the group interviews will be used by the researcher to assess what impact training had on the leaders, and whether leaders found their training to be useful. All data will be reported anonymously or in aggregate.

All surveys and interview tapes/transcripts will be kept in locked storage and then transferred onto a password-protected computer. Only the researcher and members of his thesis committee will have access to the data.

5. RISKS

This study presents no physical risks to participants. There may be psychological risks associated with students’ reflection on their alcohol use habits. In addition, there is the risk that students may be stigmatized based on their alcohol use and attitudes. This risk will be minimized by ensuring that participant’ identities and responses remain confidential. Confidentiality is a primary concern in so much as the data collected could be used for disciplinary action by the college. The Dean of Students at Hamilton College has written a letter in support of this research guaranteeing that no representative from Hamilton will request or try to obtain any of the individual/raw data from this study (see attached).
6. BENEFITS

While there are no direct benefits for the participants in this study, the results of this study may have significant benefits for subsequent participants in this, and other, outdoor orientation programs. It is hoped that the results of this study will enhance the effectiveness of the college's outdoor orientation and traditional orientation programs, especially in regard to addressing issues of alcohol use. The possibility exists that similar techniques could be used to reduce discrepancies in other areas, e.g. diversity, tolerance, and eating disorders (Curtis, 2006).
Oliver, Ben  
Kinesiology, NH Hall  
626 Bennett Way  
Newmarket, NH 03857

IRB #: 4583  
Study: Exploring the Role of Wilderness Pre-Orientation Programs in Reducing Pluralistic Ignorance  
Approval Date: 06-May-2009

The Institutional Review Board for the Protection of Human Subjects in Research (IRB) has reviewed and approved the protocol for your study with the following comments:

It is unusual that a college would release to a researcher the names and addresses of parents of students who are minors, for reasons of privacy. More typically, a college would perform the mailing themselves with the researcher providing the materials. The researcher should double check with the appropriate staff about the specifics of the process.

Approval is granted to conduct your study as described in your protocol for one year from the approval date above. At the end of the approval period you will be asked to submit a report with regard to the involvement of human subjects in this study. If your study is still active, you may request an extension of IRB approval.

Researchers who conduct studies involving human subjects have responsibilities as outlined in the attached document, Responsibilities of Directors of Research Studies Involving Human Subjects. (This document is also available at http://www.unh.edu/osr/compliance/irb.html.) Please read this document carefully before commencing your work involving human subjects.

If you have questions or concerns about your study or this approval, please feel free to contact me at 603-862-2003 or julie.simson@unh.edu. Please refer to the IRB # above in all correspondence related to this study. The IRB wishes you success with your research.

For the IRB,

Julie F. Simpson  
Manager

cc: File  
Bell, Brent
29-Apr-2010

Oliver, Ben
Kinesiology, NH Hall
626 Bennett Way
Newmarket, NH 03857

IRB #: 4583
Study: Exploring the Role of Wilderness Pre-Orientation Programs in Reducing Pluralistic Ignorance
Review Level: Full
Approval Expiration Date: 06-May-2011

The Institutional Review Board for the Protection of Human Subjects in Research (IRB) has reviewed and approved your request for time extension for this study. Approval for this study expires on the date indicated above. At the end of the approval period you will be asked to submit a report with regard to the involvement of human subjects. If your study is still active, you may apply for extension of IRB approval through this office.

Researchers who conduct studies involving human subjects have responsibilities as outlined in the document, Responsibilities of Directors of Research Studies Involving Human Subjects. This document is available at http://www.unh.edu/osr/compliance/irb.html or from me.

If you have questions or concerns about your study or this approval, please feel free to contact me at 603-862-2003 or Julie.simpson@unh.edu. Please refer to the IRB # above in all correspondence related to this study. The IRB wishes you success with your research.

For the IRB,

Julie F. Simpson
Manager

cc: File
    Bell, Brent
May 15, 2009

Mr. Benjamin (Moore) Oliver
626 Bennett Way
Newmarket, N.H. 03857

Dear Ben,

On behalf of Hamilton’s Human Subjects Committee, I am pleased to approve your proposal, “Exploring the Role of Wilderness Pre Orientation Programs in Reducing Pluralistic Ignorance,” for the period August 11 – December 20, 2009.

Best of luck with your research!

Sincerely,

Jennifer L. S. Borton, Chair
Hamilton College Human Subjects Committee