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The Effects of the Availability Heuristic on Student's Judgments of Others Alcohol Consumption

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Drinking while attending college has become the norm for many of today's young adults, despite the fact that most students are underage. College students drink more, and more often, than their non-college attending peers (Pacific Institute for Research and Evaluation, 2004). Reasons for this may include the facts that many young adults who do not attend college are in the work force and that they do not experience the same social pressure to drink as their college-going peers. In fact, one study funded by the United States Department of Education surveyed 56,000 college students from 78 two-year and four-year institutions; fully 85% reported using alcohol at least once in the past year, and 66% reported drinking at least once in the past month (Prendergast, 1994). The type of college attended made a notable difference; at two-year institutions, past year use was 77% and past month use was 53%, but at four-year institutions, 88% used in the past year and 72% in the past month. To underscore the magnitude and degree of college drinking, it has been estimated that 12 million undergraduates drink four billion cans of beer or the equivalent of 55 six packs per person each year (Witmer, 2004).

Heavy episodic drinking (i.e., binge drinking) is one of the most frequently reported and researched health problems among college youth. Considered the largest public health problem on United States college campuses, heavy episodic drinking is the leading cause of preventable death among undergraduate students (McCabe, 2002). About 44% of United States college

students binge drink, which is defined as consuming five or more drinks in a row for males and four or more drinks for females on one or more occasions during a two-week period (Weitzman, 2004). Approximately one out of every four young adults in college drinks at a binge level frequently, that is, binging more than three times in the two-week period.

Correlates of Binge Drinking

Many will agree that it is usually the combination of many specific factors, not any one factor alone, that leads to the high frequencies of binge drinking seen on college campuses in the United States. A number of environmental and individual factors have been shown to be correlated with binge drinking among college students. College students who reported that they are exposed to "wet" environments were more likely to engage in binge drinking than their peers without similar exposures. The term "wet" environment refers to a social, residential, and market surrounding in which drinking is prevalent and alcohol is cheap and easily accessible (Weitzman, Nelson, & Wechsler, 2003). When alcohol is perceived as a more prominent aspect of the local campus culture, drinking problems are much more likely to be encountered during the academic year (Perkins & Wechsler, 1996). Thus, the combination of how easily obtainable alcohol is with how acceptable its consumption is among peers is considered to be one explanation as to what leads to binge drinking.

Two person variables linked to drinking are gender and affiliation with Greek organizations (Weitzman et al., 2003). A consistent finding is that college men are more likely than college women to use alcohol, to drink greater quantities

and more frequently, and to have more alcohol-related problems (Prendergast, 1994). In fact, compared to women at coeducational institutions, women at women's colleges binged less frequently, had fewer alcohol-related problems, experienced fewer negative effects of others' drinking, and were less likely to drink and drive (Dowdall, Crawford, & Wechsler, 1998). Although a significant difference in alcohol consumption exists between genders, differences exist within genders as well. Corbin, McNair, and Carter (1996) revealed that the heaviest female drinkers in their study exhibited the lowest self-esteem scores on the Rosenberg Self-Esteem Scale, with scores increasing as consumption decreased. For males in their study, there were no significant differences between groups, although heavier drinkers tended to have slightly higher self-esteem scores than lighter drinkers.

Another consistency found among college campuses is the correlation between patterns of drinking and fraternity/sorority membership. In a report on alcohol use and consequences of use in Greek societies, Presley, Meilman, and Lyerla (1994) analyzed data from students at 78 institutions in the United States. They found that, in all cases, Greek house residents drank more, engaged in heavy drinking more often, and experienced more negative consequences than the general student population. Their results indicated that fraternity house residents averaged 20.3 drinks per week, compared to 7.5 drinks for all male students, whereas sorority house residents averaged 6.2 drinks per week compared to 3.2 drinks for all female students. Also, 74% of Greek house residents reported binge drinking, while only 42% of students in general did. In a follow-up study that

collected data from 25, 411 college students from 61 different institutions, similar results were found (Cashin, Presley, & Meilman, 1998). The findings indicated that non-Greeks averaged significantly fewer drinks per week, engaged in heavy drinking less often, and with minor exceptions suffered fewer negative consequences of drinking or other drug use than those who were involved in Greek life. Thus, regardless of the time period when students were surveyed and the institution they attended, it is widespread and quite common for students with Greek affiliations to drink more and suffer more negative consequences than non-Greek students.

Other personal factors, including age, religion, ethnicity, and an involvement in athletics have also been related to college students' use of alcohol (Baer, 2002). However, identifying variables associated with the frequency of alcohol consumption is only the first step in understanding the excessive use of alcohol by college students. The next step is discovering the reasons why these young adults drink. Theories have focused on environmental as well as personal determinants.

Theories of College Drinking

Theories that attempt to explain variations in college drinking focus either on environmental or individual levels of analyses. One theory is that the specific features of college environments play a powerful role in promoting heavy alcohol use. The term *college environment* is broad in meaning but has been broken into three more distinctive categories by some researchers: (1) organizational property variables of campuses, including affiliations (historically black institutions,

women's institutions), presence of a Greek system, athletics and two or four-year designation; (2) physical and behavioral property variables of campuses, including type of residence, institution size, location and quantity of heavy episodic drinking; and (3) campus community property variables, including pricing and availability and alcohol outlet density (Presley, Meilman, & Leichliter, 2002).

Advocates of the environmental theory support their ideas by the finding that rates of binge drinking vary dramatically by college, geographic region, and the sets of policies and laws governing alcohol sales and use (Weitzman, 2004). One of the most important environmental determinants of binge drinking that has been noted is pricing and promotion of alcoholic beverages. A high density of alcohol outlets around campuses correlates with higher levels of frequent and heavy drinking and drinking-related problems included among women, underage students and those who reported that they were not binge-drinkers in high school but picked up the behavior in college (Weitzman, 2004). Another environmental factor contributing to alcohol use was the type of living arrangement students resided in. In a survey of 606 Rutgers University undergraduates, O'Hare (1990) found that there were differences in drinking rates depending on the living arrangements. Commuters living at home were more likely to be lighter drinkers than students who lived on campus. The average number of drinks per week and the number of heavy episodic drinking episodes were all higher for on-campus residents as compared with off-campus residents, and students with the highest

levels of consumption and heavy episodic drinking episodes were those who lived in a fraternity or sorority house (Presley et al., 1994).

However, given the complexities of campus environments, and in defining components of these environments, it is somewhat difficult to firmly establish what the most compelling environmental causative factors are. Even though evidence has been found linking specific environmental factors to alcohol use among college students, it has been almost impossible to discriminate whether these factors are purely environmental or partially related to other factors, such as social or personal issues. It also has to be noted that colleges and universities are embedded in an extraordinary number of environments as well as an ever-changing contemporary social scene and collegiate culture, which poses challenges to researchers to distinguish which factors are environmentally related to drinking and which are not. Another complicating issue that arises is that each college attracts students who choose on an individual basis to drink or not drink for a variety of reasons that have no relation to the collegiate environment (Meilman et al., 1999). For example, although heavy drinkers may be more attracted to "party schools," other factors also play a role in their decision to attend a particular school, such as majors or sports. It is not until the student begins to experience college life that both individual and contextual forces go to work.

Besides environmental determinants, theories have also focused on personal reasons for drinking. The collegiate environment that students live in is fast-paced, highly demanding and can often be overwhelming for many. Students

face enormous pressures while at school from their family, friends and faculty to achieve academic success. They are expected to be efficient at multi-tasking so they are able to attend class, complete homework, hold a job, and participate in a sport, all while they try to maintain for themselves some type of a social life. Stressors like these, and many others, can cause students to drink to cope with their problems to gain some relief from them, even if only for a night. Research has shown that drinking to cope among college students is both prevalent and problematic across campuses (Park & Levenson, 2002). Not only do students who drink to cope report much higher levels of consumption, they also experience more negative consequences. Students who drink to cope, which are sometimes referred to as "escape drinkers," are in fact really engaging in a complex process of dealing with stress and regulating its negative affect. Park and Levenson (2002) found that students chose alcohol over other remedies to alleviate negative affect caused by stress.

Although both men and women have been found to drink to cope with stress and other related problems, a noticeable difference emerges between the two genders. In a seven-year longitudinal study, which examined participants from age 18 to 25 and also controlled for family history of alcoholism, Rutledge and Sher (2001) demonstrated that in years 2, 3 and 4 of the study, drinking to reduce tension was a stronger predictor of heavy drinking for men than women, but in the seventh year, stress was positively associated with heavy drinking only for males who had stronger motives to reduce tension. O'Hare (2001) also found that men with high stress scores are more likely to drink excessively to cope with

negative emotions. The consistent finding that men turn to alcohol more than women to cope may reflect gender-related cultural drinking norms. In society, heavy drinking by men is more accepted than heavy drinking by women, so this discouragement for women to drink may actually lead to them to consume less alcohol, even in stressful situations.

Ironically, students who drink with the intention of providing relief from stress and other negative factors in their life suffer the most long-term consequences. In exchange for short-term happiness, they gain long-term tribulations. Research has shown that this type of escape drinking is associated with greater risks for alcohol-related problems than other forms of drinking, such as social drinking. This is supported by the finding of Farber, Khavari, and Douglass (1980) that escape drinkers scored higher on alcohol consumption indexes and that, of a sample of 133 alcoholics, 93% were classified as escape drinkers. Even when consumption levels are controlled for, drinking to cope still predicts abuse status. Abbey, Smith, and Scott (1993) reported that drinking to cope with stress was a stronger predictor of both monthly alcohol consumption and frequency of heavy consumption than social drinking; this relationship was strongest in young adults. These studies, and others, indicate that stress-related drinking is both a powerful motive for drinking as well as a harmful one. Students classified as escape drinkers in college have also been found to continue, if not increase, their escape drinking when followed up on after graduating college (Abbey et al., 1993). This implies that individuals who drink to cope in college

may become so dependent on alcohol to alleviate their problems that they continue to employ this tactic into adulthood.

An additional personal factor that has been shown to influence student's drinking is the particular expectancies they hold about the effects of alcohol. *Alcohol expectancies* are typically defined as beliefs about the effects of alcohol on behavior, mood and emotions (Williams & Clark, 1998). What this means is that individuals, including college students, hold certain beliefs about the positive and negative consequences of drinking alcohol, and these beliefs are related to their drinking habits. Alcohol expectancies co-vary with alcohol consumption, with heavier degrees of drinking associated with stronger expectancies among normal adults, alcoholic inpatients, adolescents, and college students (McNally & Palfai, 2001).

The particular expectations that college students have about the effects of alcohol may serve to influence their desire to drink. Students who hold higher, more positive expectations about the effects of alcohol will be more likely to consume alcohol more often believing their expectations will hold true than students who hold lower, less positive expectations. Brown, Goldman and Christiansen (1985) found that the strength of a person's alcohol expectancies, and not their degree of alcohol abuse, was associated with their desire and tendency to continue to drink. Hence, it is not only the expectancies students have about alcohol that predicts its consumption, but also the value that the student attaches to the presumed effects. The expectation that positive effects occur as a result of consuming alcohol, such as tension reduction and improvements in social

behavior, is also strongly associated with problematic drinking among college students (Thombs, 1993). One study found that college students who scored high on the Alcohol Expectancy Questionnaire were more likely to later become problematic drinkers than students with lower alcohol expectancy scores (Kidorf, Sherman, Johnson, & Bigelow, 1995). Although positive expectancies have consistently been found to be positively related to higher levels of drinking among college students, certain expectancies are more related than others. Neighbors, Walker, and Larimer (2003) found that people who believe that alcohol makes it easier to be more exciting, brave, relaxed, talkative and sexier, drink more. They also found that individuals who value these presumed effects more than others drink more.

The relationship between negative expectancies and alcohol consumption seems not to be as clear cut and well defined as positive expectancies. One might predict that because positive expectancies correlate positively with drinking, negative expectancies should correlate negatively with drinking. However, those studies that have looked specifically at the influence of negative expectancies on the etiology of drinking behavior have yielded surprising results. Christiansen, Smith, Roehling, and Goldman (1989) found no relationship between negative expectancies and alcohol use in a prospective analysis of seventh and eighth graders' drinking behavior. In a longitudinal analysis of fraternity members' drinking patterns, Stacy, Widaman, and Marlatt (1990) further reported that positive and not negative expectancies predict subsequent alcohol use, even when only the most personally salient negative expectancies are measured. What the

research does show is that, independent of consumption levels and of the number of problems experienced, negative alcohol-related expectancies are positively associated with motivation to change drinking behavior (McNally et al., 2001). These findings are in line with the assertion that positive expectancies may represent motivation to drink, whereas negative expectancies represent motivation to restrain (Jones & McMahon, 1994).

Other theories of drinking encompass both environmental and personal reasons as the cause of drinking. According to the "drinking context theory," alcohol consumption is considered to be a situation-specific behavior, meaning the same individual may follow different sets of rules in different situations, yielding great variability in his or her drinking (Kairouz et al., 2002). The amount which a student drinks at a fraternity party may differ significantly from the amount that same student drinks while at a bar. In fact, research has supported this situational model of drinking and found that college students drink predominantly in social contexts, such as at parties, fraternity and sorority gatherings, among family and friends, and members of the opposite sex (Cashin, Presley, & Meilman, 1998).

The contexts in which students choose to drink come in many different shapes and sizes. Students drink both off-campus and in a wide variety of on campus settings. To attempt to narrow down the wide array of situations in which students drink, Kairouz, Gliksman, Demers, and Adlaf (2002) asked students to identify contexts they drank in most frequently. Students reported drinking for aesthetic reasons, such as to enjoy the taste or to enhance a meal (24.9%); for

social reasons, such as to celebrate (21.3%); to be sociable or polite (16.9%); and, to a lesser extent, to comply with others (6.0%). By far, social reasons appear to be the main reasons for drinking for undergraduates. In 63% of the situations, a social reason was given as the primary motivation for drinking. Kairouz (2002) also found that compensatory reasons for drinking, such as to relax, to feel good, to forget worries and to feel less shy are less common but not trivial, since this type of motivation was provided in roughly one of five drinking occasions.

Despite the predominant social influence on collegiate heavy drinking, a small but significant minority of college students -- 15% according to O'Hare (1990) -- drink when alone. Wechsler and Isaac (1992) reported that a small percentage of female (5%) and male (7%) heavy drinkers regarded drinking alone at home an appropriate situation in which to get drunk. Students may drink heavily when alone for a variety of reasons. Solitary heavy drinkers might hold different alcohol outcome and self-efficacy expectancies, experience more negative consequences from drinking, report more depressive symptoms, and recognize a greater need to reduce drinking than students who restrict heavy drinking to social settings (Christiansen, Vik, & Jarchow, 2002). Regardless, however, of whether a student drinks alone or in a primarily social context, research indicates that the student's reason for drinking and the drinking setting together influence alcohol consumption.

Yet another theory that integrates environmental and personal factors is "social norms theory," which attempts to explain alcohol use by college students by emphasizing perceived drinking norms and peer influences (Perkins, 2003).

The broad idea that peer influences on alcohol use must further be subdivided into types of influences: direct (active) peer influences and indirect (passive) peer influences. *Direct peer influences* refer to active efforts designed to get a person to drink, and can range from polite gestures (e.g., offering to get a peer a drink, buying a round) to overt commands or encouragement to drink (e.g., forcing others to drink during drinking games) (Borsari & Carey, 2001). To observe this effect, Wood, Read, Palfai, and Stevenson (2001) conducted a study where offers of alcohol use were assessed by the single survey item: "In the past year, how many times have you been offered an alcoholic drink?" They found a positive association between alcohol offers and both alcohol use and alcohol-related problems. They also found that the relationship between alcohol offers and alcohol use was not mediated by alcohol-related expectancies, which may indicate that active pressures to drink and perceived norms simply do not influence beliefs about alcohol's effects, but rather have a direct influence on drinking behavior.

One plausible factor that may induce unwilling acceptance of alcohol drinks is the social isolation that one may encounter if alcohol is refused. This suggestion gains support from a study by Rabow and Duncan-Schill (1994). Drinking diaries kept by participants, revealed that drinking is common at social functions, and being without a drink provokes comments and offers of alcohol. It was also noted that refusal of drink offers can lead to exclusion from social events. Although refusal of alcohol has been found to be associated with negative consequences, such as social isolation and criticism, certain characteristics of students have been found to be more positively associated with resistance to overt

offers of alcohol than others. Shore, Rivers, and Berman (1983) found a positive correlation between social ease in situations and ability to resist offers; in addition, year in school, but not age, was positively correlated with ability to resist offers of alcohol. Klein (1992) observed similar results and also discovered that women were more likely to refuse an alcoholic drink than men. Men residing in fraternities were least likely to refuse an offered drink.

However, peer influences on drinking behaviors are not limited to direct offers or encouragement to drink. Peers, through their own actions, may provide information about what behaviors are accepted and admired, what is considered appropriate in a given social context, and, therefore, what behaviors are likely to lead to social acceptance and reinforcement (Borsari & Carey, 2001). One type of indirect social influence that has been linked to drinking behavior is modeling. *Modeling* is defined as the "temporary and concurrent imitation of another's behavior" (Borsari & Carey, 2001). Corcoran (1995) demonstrated the effects of modeling on the choice to consume alcohol. In this study, participants were placed in a room with a confederate who ordered either an alcoholic or non-alcoholic drink. The participants consistently modeled the confederate's beverage selection by ordering an alcoholic drink if the confederate did so first. Hence, the participants were influenced by the beverage selected by the confederate and imitated the selection as a result.

Prior research has mostly stressed the influence of peer modeling on quantity of alcohol consumed. Caudill and Marlatt (1975) found that when participants were paired with a confederate in a wine-tasting task, the participants

drank significantly more alcohol if the confederates were modeling high consumption behavior rather than low consumption behavior. This finding has been supported consistently across the literature (Hendricks, Sobell, & Cooper, 1978; Cooper, 1979; DeRicco & Niemann, 1980). Overall, the modeling research indicates that participants exposed to heavy-drinking models consume more alcohol than participants exposed to light-drinking models or no models at all. Dericco and Garlington (1977) took this finding one step further. They showed that participants modeled the drinking of confederates, even after being told of the purpose of the study, namely, that the confederate was trying to influence their alcohol use. This implies that the influence of peer modeling on quantity of alcohol consumed is so strong that students intentionally disregard external information, even when that information is supplied to potentially lower consumption levels.

Another type of indirect social influence that has been linked to drinking behavior is perceived norms. *Norms* are defined as "self-instructions to do what is perceived to be correct by members of a culture" (Borsari & Carey, 2000). Therefore, in the context of drinking, norms can be thought of as commonly held attitudes about correct behavior and the most commonly exhibited behaviors concerning alcohol use. The concept of perceived norms is an encompassing idea that contains beliefs about others' behaviors as well as about others' beliefs and attitudes. Perceived norms, then, must further be broken down into two specific subtypes: descriptive norms and injunctive norms. *Descriptive norms* are the perception of other's quantity and frequency of drinking in discrete drinking

situations (i.e., popular norms). *Injunctive norms* reflect the perceptions of others' approval of drinking, and represent perceived moral rules of the peer group (i.e., prescriptive norms) (Borsari & Carey, 2001). Although the two types of perceived norms are in essence referring to different things, they both serve to assist an individual in determining what is acceptable and unacceptable social behavior.

Both descriptive and injunctive norms guide students in determining how much and how often they should drink. This becomes highly problematic, though, when these norms get distorted. Research conducted in a variety of college settings, including large universities and small colleges and in different regions of the United States, has found that most students do not accurately perceive the real norms regarding peer alcohol use (Perkins & Wechsler, 1996). Instead, students tend to perceive an exaggerated level of use and more permissive attitudes than actually exist.

Baer, Stacy and Larimer (1991) demonstrated these inflated levels of perceived alcohol use by students when they showed biases in the normative beliefs about the quantity of drinking among student residence groups. They found that students perceive "typical members of their residence" and "close friends" as drinking significantly more than they themselves drink. Baer and Carney (1993) found similar results but also extended its truth to both light and heavy drinkers and to perceptions of alcohol-related problems. Thus, regardless of what type of drinker the college student may be, the bias remains intact, with individuals perceiving others as drinking more than they themselves drink and as having more problems then they themselves have. The literature also suggests that

there is a direct relationship between how much alcohol students perceive others as drinking with how much they themselves drink (Borsari & Carey, 2001). Hence, the more students inflate the level of perceived alcohol use by others, the more students themselves drink.

Perkins and Berkowitz (1986) documented biases in injunctive norms by asking students via questionnaire to rate their own personal attitudes towards drinking, as well as their perception of the general campus attitude. They found that 66% (N=1,116) of students selected a moderate position for their own attitudes. However, perceptions of the norm varied from moderate to extremely liberal, with the majority of students (62.7%) holding liberally inflated perceptions. The actual campus norm of a moderate position was only accurately perceived by 35.4% of students. Prentice and Miller (1993) obtained similar results when they surveyed students regarding their own comfort with drinking habits on campus, as well as the average student's comfort. They found that students were much less comfortable with the drinking habits on campus than they believed the average student to be. Prentice and Miller extended their findings by asking students a third question: to rate how comfortable their friends feel with the drinking habits on campus. Not surprisingly, students' ratings of their own comfort were significantly lower than both ratings of friends' comfort and of the average student's comfort. Therefore, students perceive both their friends and the average student as holding more permissive attitudes towards alcohol than they themselves hold. They also perceive their peers as holding more permissive attitudes than they actually do.

One plausible way that students form these misconceptions regarding others' alcohol consumption and attitudes towards alcohol is through the use of cognitive heuristics. Generally speaking, *heuristics* are referred to as information-processing rules of thumb that enable people to think in ways that are quick and easy but frequently lead to error (Brehm, Kassin, & Fein, 1999). The use of heuristics as short cuts is quite common, and many different types of heuristics have been identified. A few commonly studied heuristics include the *representative heuristic*, the *simulation heuristic*, the *anchoring and adjustment heuristic*, and the *availability heuristic* (Fiske & Taylor, 1991). Although any of these four heuristics could potentially assist in answering the question of why college students consistently overestimate other students drinking, for purposes of this study, only the availability heuristic will be examined.

Availability is a heuristic that is used to evaluate the frequency or likelihood of an event on the basis of how quickly instances or associations come to mind (Fiske et al., 1991). When examples or associations are readily accessible and easily brought to mind, this fact inflates estimates of frequency or likelihood. To demonstrate this phenomenon, Tversky and Kahneman (1973) asked research participants: Which is more common, words that start with the letter *r* or words that contain *r* as the third letter? In actuality, the English language has many more words with *r* as the third letter than the first. However, most people guessed that more words begin with *r*. Apparently, it is easier to bring to mind words in which *r* appears first. Similar findings were obtained by McKelvie (2000), when undergraduates were asked to listen to lists of names. A list of 42 names was read

aloud, 21 famous male names and 21 non-famous female names. An identically structured list was then repeated with 21 famous female names and 21 non-famous male names. When unexpectedly asked to report the perceived number of men's and women's names, a majority in both studies (64% in the former and 58% in the latter) judged the famous gender as more frequent than the non-famous gender, and the mean estimates were higher for the famous than the non-famous gender. Hence, both studies indicate that people's estimates of likelihood are heavily influenced by events that are readily available in memory.

Given that the literature has shown that estimates of frequency are inflated when examples or associations are readily accessible and easily brought to mind, it is possible that this same process is at work while college students are estimating others' attitudes towards drinking and the frequency with which other students drink. When students are asked how much the average college student drinks, they utilize the availability heuristic by thinking back to all of the occurrences that they have encountered of other students' drinking. If these occurrences were encountered frequently, then the images of other students' drinking will be readily accessible and easily brought to mind. Since these images are so quickly brought to mind, the student's estimate then becomes inflated because the student interprets this ease of accessibility as a marker for increased frequency/quantity of drinking. Instead of basing their estimates of others' drinking on statistical facts or actual rates, they instead base their estimates on the ease with which examples of student drinking comes to mind, leading them to make erroneous assessments. Overestimating the frequency with which others'

drink may potentially affect their perceptions of others' attitudes towards drinking as well. If other students are thought to drink more often than they in fact do, it can cause students to think that other students have more permissive attitudes than they in fact do.

Purpose of Present Study

The goal of this study is to assess whether students utilize the availability heuristic when estimating other students' attitudes towards drinking and the frequency with which other students drink. It is hypothesized that showing students a short movie clip that either portrays liberal heavy drinking at college or the conservative academic side of college (without drinking) will serve to either enhance their perceptions of students' drinking or decrease them. Students who watch the drinking clip will have those images of students drinking readily accessible, and if they utilize the availability heuristic, those students should be more likely to inflate their estimates of others' drinking. Students who watch the non-drinking film clip will have those images most readily available, and should decrease their estimates of student drinking. The film clips students watch will also serve to assist them when making judgments of other's attitudes towards drinking. The students who watch the drinking film clip will perceive others as having more permissive attitudes towards drinking, whereas the students who watch the non-drinking clip will perceive others as having more conservative attitudes towards drinking.

Method

Sample

The sample consisted of 82 Syracuse University undergraduate students, 30 males and 52 females. The participants were between the ages of 18 and 21, with the average age being 18.59 years (SD = .74). Most of the participants were freshman (86%), followed by sophomores (13%), and then juniors (1%). The majority of participants were Caucasian (80%), with Asian (11%) being the next most frequent. Nearly all of the participants lived in an on-campus dormitory (91%), and others reported living in an off-campus house or apartment (6%), fraternity house (1%), or with family (1%). Regarding participants cumulative GPA, 33% of participants reported a GPA between 3.6 and 4.0, 41% between 3.1 and 3.5, and 26% between 2.6 and 3.0. Of the 82 participants, 76% were not affiliated with the Greek system, 20% were currently pledging, and 4% were a member of a social fraternity or sorority. All participants were recruited from an introductory psychology class, and received credit toward their research experience requirement.

Design

The design of this experiment was a randomized two-group, post-test only design. The independent variable was the movie clip that either emphasized college drinking or not. The dependent variables were the participants' attitudes towards drinking and estimated norms for peer drinking. The participants recruited were randomly assigned to one of two conditions: either to watch a 15-minute movie clip of *Animal House* (with drinking), or to watch a 15-minute

movie clip of *Rudy* (without drinking). All members of a given condition were shown an identical segment. The movie clips were shown to groups of five participants at a time and each session lasted approximately one hour. The sessions took place across a one-week time span, with four sessions each day. They were held Monday through Friday, beginning at 4 pm and ending at 8 pm. To avoid confounding condition with time, counterbalancing was used by alternating the time that each film clip was shown. The first group on Monday from 4 pm to 5 pm, and the third group from 6 pm to 7 pm, watched a clip from *Rudy*. The second group on Monday from 5 pm to 6 pm, and the fourth group from 7 pm to 8 pm, watched a clip from *Animal House*. The times that the films were shown alternated every day.

The particular films were chosen for manipulation of the independent variable because each represents in a fictitious way a distinct side of college life. The *Animal House* film was selected because it represents a clear example of liberal heavy drinking at college. Conversely, the *Rudy* film was selected because it represents a clear example of the conservative academic side of college. Although there are many film clips that could have been selected for the same purpose, *Animal House* and *Rudy* were chosen because of their popularity and the fact that they were very different in the portrayal of college drinking. The particular 15-minute segments that were shown to participants from each movie were selected because they each captured the most salient images in the films and generated the desired portrayal of drinking.

Measures

Participants filled out a demographic form prior to the experimental manipulation. After the manipulation, they completed a questionnaire packet containing three measures: a manipulation check, the Drinking Norms Rating Form and an injunctive norms measure. All measures appear in Appendix A.

Demographic Form. The demographic survey was given to participants to obtain personal information to describe the sample. The form consisted of items relating to the participant's age, gender, year in college, cumulative GPA, ethnicity, residency, height, weight, and Greek affiliation. Data from this survey were used (a) to evaluate equivalence of groups, and (b) to investigate whether certain student characteristics influence their particular judgments towards alcohol use and consumption.

Manipulation Check. The manipulation check was given to participants to assess whether or not the experimental manipulation was successful in influencing participants' mental image of college students. The 18 manipulation check items were generated so that approximately half would characterize the student portrayal of *Rudy* and the other half would capture the student portrayal of *Animal House*. Participants were asked to indicate in their opinion how well each characteristic (i.e., *intelligent, risk-taking*) presented on a list described college students. The response options were coded as follows: 1 = "extremely descriptive," 3 = "somewhat descriptive," 4 = "somewhat undescriptive," and 6 = "extremely undescriptive."

Drinking Norms Rating Form (DNRF). The Drinking Norms Rating Form (Baer et al., 1991) was given to participants to assess their average and heaviest weekly drinking, as well as that of close friends, the typical student at Syracuse University, and the typical student in the United States. Participants were asked to estimate the average number of drinks they and their peers have consumed each day of the week over the past 30 days. One standard drink was defined as 12 oz. of beer, four oz. of wine, or one shot of liquor (straight or in a mixed drink). The variables that were derived are the total number of drinks that (a) participants, (b) close friends, (c) Syracuse University students, and (d) United States students consume on average in a week (i.e., sum of all seven days).

Injunctive Norms. The injunctive norms form, adapted from Perkins and Berkowitz (1986), was given to participants to assess their attitude toward drinking alcoholic beverages, as well as that of the most common attitude among students in general at Syracuse University. A zero response on the scale corresponded to the statement "drinking is never a good thing," a two corresponded to the statement "occasionally getting drunk is okay as long as it doesn't interfere with academics or other responsibilities," and a four corresponded to the statement "frequently getting drunk is okay if that's what the individual wants to do." Participants completed the scale describing their own attitude, and then they completed an identical scale in order to represent the attitude of other Syracuse University students.

Procedure

All of the sessions took place in a technology-wired classroom provided by Syracuse University. When all participants arrived at the testing site, they provided informed consent (see Appendix B). Participants were given a brief overview of the study, instructed to shut off cell phones, and explicitly instructed by the researcher not to converse or speak until the testing session was complete. The consent form was read aloud to them, any questions the participants had were answered, and then they signed the informed consent form. Next participants completed a two-page demographic form. After all demographic forms were collected, the participants were shown a 15-minute movie clip of either *Animal House* or *Rudy*.

The segment of *Animal House* that served as an experimental stimulus begins with two freshman exploring different fraternity houses on campus. They come to the Delta house, where they encounter a Delta member drinking a beer outside on the porch next to empty kegs. He invites them inside, where a huge party is going on. Everyone is drinking, smoking, laughing, socializing, playing cards, and appears to be having a good time. The next scene is in the administration office, where the dean is speaking to the student president about the worst fraternity house on campus. He explains that he wants to get Delta kicked off campus because they are too disorderly and rebellious. The next scene is at Delta, and the brothers are trying to decide who they want to pledge. They are all drinking beers as they go through slides of the various freshmen who want to pledge the house. After deciding, the Delta members go with fire extinguishers

into the freshman dorms and wake up the pledges to come to the house. The freshmen take the Delta pledge and then engage in another party. They are, once again, drinking, singing, dancing, and having a good time. The next scene is in a lecture hall where students are shown sleeping, drawing and being inattentive in class. This was followed by cheerleaders talking about men and sex on bleachers, where a member of Delta is secretly looking up their skirts.

The segment of *Rudy* that was used as an experimental stimulus begins with the start of a Notre Dame football game. Rudy, who is a student at Holy Cross College, is trying to get a ticket for the game, but it is sold out. The next day, he goes to work as a groundskeeper for the Notre Dame football field and talks to his boss about the previous day's game. Rudy is next shown in class taking a test and then goes to see a priest at Holy Cross. He shows the priest his report card of all B's and one A, and explains that his grades have gone down a bit, but he is involved in a lot of extra curricular activities. The next day, he checks his mailbox and finds a rejection letter from Notre Dame, into which he is trying to transfer into. He goes home for Christmas to show his dad his report card and convince him to come to a football game. The film then switches scenes rapidly, showing Rudy jogging, studying, practicing football, and at the library. He checks his mailbox again and receives another rejection letter. The film switches scenes rapidly again, showing Rudy practicing football, studying, sitting in class, and praying. He checks his mailbox again and receives yet another rejection letter. He goes to church to pray and runs into the priest where he gets moral support. He checks his mailbox again and receives an acceptance letter

from Notre Dame. After crying tears of joy, he goes to his father's job to show him and his dad is delighted.

After viewing the movie segment, participants completed a four-page questionnaire packet, which measured both injunctive and descriptive norms. Once the participants completed and handed in the questionnaire packet, they received course credit and were allowed to leave the testing site.

Analysis Plan

Data Preparation. To prepare the data for analysis from the Drinking Norms Rating Form, the sum of drinks per week across seven days was calculated for (a) students' average drinks per week, (b) students' heaviest drinking week, (c) average close friends' drinks per week, (d) average Syracuse University students' drinks per week, and (e) average United States students' drinks per week. For the manipulation check, a sum was calculated for the eight items that captured *Rudy* themes, "industrious," "intelligent," "goal-directed," "capable of multi-tasking," "determined," "mature," "motivated," and "organized." Another sum was calculated for the 10 items that captured *Animal House* themes, "fun-loving," "irresponsible," "risk-taking," "social," "flirtatious," "unconventional," "hedonistic," "careless," "rowdy," and "reckless." This resulted in two sum scores.

Descriptive Analysis. First, groups were compared on demographic characteristics. For categorical variables (i.e., gender, year in college, cumulative GPA, ethnicity, residency, and Greek affiliations), chi square analyses were used to compare groups. For continuous variables (i.e., age) t-tests were used. Second, groups were compared on average drinks per week and heaviest week, using two

t-tests. Next, personal attitudes towards drinking were compared using the chi square test. Finally, groups were compared on the manipulation check using two t-tests.

Hypothesis Testing. To test the first main study hypothesis, a series of t-tests were performed to determine whether or not the experimental manipulation resulted in different estimates of descriptive norms. First, groups were compared on estimates of (a) average close friends' drinks per week, (b) average Syracuse University students' drinks per week, and (c) average United States students' drinks per week. Then, groups were compared on perceived approval of drinking by others, using the chi square test.

Results

Descriptive Analyses

Forty-three participants watched the *Rudy* film clip (i.e., Group A) and 39 participants watched the *Animal House* film clip, (i.e., Group B). As shown in Table 1, approximately one half of participants in Group A were female (56%) and more than half of participants in Group B were female (72%). The majority of participants in both groups were freshman, 91% in Group A and 79% in Group B. In Group A, 37% of participants reported a cumulative GPA between 3.6 and 4.0, and 37% between 3.1 and 3.5. In Group B, 28% of participants reported a cumulative GPA between 3.6 and 4.0, and 46% between 3.1 and 3.5. The remaining 26% of participants in each group reported a GPA between 2.6 and 3.0. Participants describing themselves as Caucasian accounted for 86% of participants in Group A and 74% in Group B. Almost all of the participants in

both groups resided in an on-campus dormitory, 91% for Group A and 92% for Group B. The majority of participants in both Group A (74%) and Group B (77%) were not a member of a social fraternity or sorority. Chi square analyses revealed no significant differences between groups regarding gender, year in college, cumulative GPA, ethnicity, residency, and Greek affiliation (all p's > .10). The average age of participants in Group A was 18.46 years (SD = .59) and Group B was 18.72 years (SD = .86). A t-test revealed no significant age differences between groups, t (80) = -1.57, p > .10.

Participants in Group A reported consuming an average of 8.46 (SD = 8.16) drinks per week and participants in Group B reported an average of 10.31 (SD = 10.51) drinks per week, as displayed in Table 1. There were no significant differences between groups in the average number of drinks consumed per week, t (80) = -0.83, p > .10. During their heaviest week of alcohol consumption, participants in Group A reported consuming an average of 15.87 (SD = 14.36) drinks and participants in Group B reported an average of 15.82 (SD = 15.48) drinks. There were also no significant differences between groups on their heaviest week of alcohol consumption, t (80) = 0.02, p > .10. The average attitude held by participants in both groups was "occasionally getting drunk is okay as long as it doesn't interfere with academics or other responsibilities," represented in Group A by a score of 1.86 (SD = .52) and Group B by 1.85 (SD = .54). A chi square analysis revealed no significant differences between groups on their attitudes towards drinking alcoholic beverages.

As shown in Table 2, participants in both Group A and Group B thought the characteristics "fun-loving," "social," and "flirtatious" best described college students, indicating that they were "extremely descriptive" characteristics. This was represented in groups by an approximate score of 2. Participants in both groups thought the characteristics "industrious," "intelligent," "risk-taking," "goal-directed," "capable of multi-tasking," "determined," "hedonistic," "motivated," "careless," "organized," "rowdy," and "reckless" were "somewhat descriptive" of college students, represented by an approximate score of 3. The characteristics "irresponsible" and "unconventional" were thought to be "somewhat undescriptive" of college students by both groups, indicated by scores nearing 4.

To test whether or not the experimental manipulation was successful in influencing participants' mental image of college students, two t-tests were performed. For items that captured *Rudy* themes on the manipulation check, participants in Group A had an average score of 2.92 (SD = .51) and participants in Group B had an average score of 3.08 (SD = .58), as displayed in Table 2. A t-test revealed that there were no significant differences between groups on items that captured *Rudy* themes, $t(80) = -1.29$, $p > .10$. For items that captured *Animal House* themes on the manipulation check, participants in Group A had an average score of 2.92 (SD = .57) and participants in Group B had an average score of 2.86 (SD = .57). A second t-test revealed there were also no significant differences between groups on items that captured *Animal House* themes, $t(80) = 0.45$, $p > .10$.

Hypothesis Testing

To test the hypothesis that participants will differ in their estimates of others' drinking depending on the film clip watched, three t-tests were performed. Participants in Group A estimated that their close friends consumed an average of 15.42 (SD = 11.38) drinks per week, as shown in Table 3. Group B participants estimated that their close friends average 18.15 (SD = 11.92) drinks per week. Although the means were ordered according to the hypothesis, a t-test determined that there were no significant differences between groups regarding their estimates of their close friends' average drinks per week, $t(80) = -1.06$, $p > .10$. Participants in Group A estimated that the typical student at Syracuse University consumes an average of 19.31 (SD = 8.37); similarly, Group B estimated that the typical Syracuse University student consumes an average of 20.10 (SD = 8.16) drinks per week. Given the closeness of the two group's estimates, there were no significant differences between groups regarding their estimates of the typical Syracuse University student's average drinks per week, $t(80) = -0.43$, $p > .10$. Groups also did not differ on their estimates of the typical United States student's average drinks, $t(80) = -0.36$, $p > .10$. Participants in Group A estimated that the typical United States student consumes an average of 20.26 (SD = 9.79) drinks per week and participants in Group B estimated that they consume an average of 20.99 (SD = 8.26) drinks per week.

To test the hypothesis that groups would differ on their perceptions of students' attitudes towards drinking, a chi square test was used. The chi square analysis revealed no significant differences between groups on their estimates of

others' attitudes towards drinking. Both participants in Group A and Group B estimated that the average Syracuse University student held the attitude that "occasionally getting drunk is okay as long as it doesn't interfere with academics or other responsibilities," which corresponded to an average score of 2.72 (SD = .91) for Group A and 2.49 (SD = .68) for Group B.

Exploratory Analyses

Although not part of the original hypotheses tested, exploratory analyses addressed whether the experimental stimuli produced significant effects on heavier vs. lighter drinking participants. A median split was used on participant's heaviest drinking week, which cut the distribution in half at 11 drinks per week. There were 40 participants that reported consuming more than 11 drinks on their heaviest drinking week: 23 participants in Group A and 17 in Group B. The participants in Group A estimated that their close friends consume an average of 20.65 (SD = 11.04) drinks per week. The participants in Group B estimated that their close friends consume an average of 27.47 (SD = 9.65) drinks per week. As would be predicted, participants in Group B estimated that their close friends drink significantly more than participants in Group A, t (38) = -2.04, $p < .05$. However, there were no significant differences between groups for participants that reported consuming less than 11 drinks on their heaviest drinking week for estimates of their close friends drinking, t (38) = -0.61, $p > .10$. There were also no significant differences between groups for their estimates of the typical Syracuse University students' and the typical United States students' average drinks per week when the groups were split into heavier and lighter drinkers.

Discussion

The primary purpose of this study was to test the hypothesis that enhancing the availability of images that either portrayed liberal heavy drinking at college or the conservative academic side of college (without drinking) would serve to influence students' perceptions of peer norms. The first hypothesis, that the movie clips would serve to either enhance participants' perceptions of students' drinking or decrease them, was not supported by the results in this study. The second hypothesis, that students who watch the drinking film clip will perceive others as having more permissive attitudes towards drinking, whereas the students who watch the non-drinking clip will perceive others as having more conservative attitudes towards drinking, was not supported in this study. Although the two hypotheses were not supported by the data, exploratory analyses suggested that the manipulation did have an effect for subsets of participants. Therefore, the overall goal of the study to assess whether students utilize the availability heuristic when estimating the frequency with which other students drink and other students' attitudes towards drinking still warrants further investigation.

Although groups did not differ significantly in their estimates of (a) their close friends' drinking, (b) the average Syracuse University students' drinking, and (c) the average United States students' drinking, participants in Group B did produce higher estimates for all three measures than participants in Group A. That is, students who watched the film portraying liberal heavy drinking at college produced higher estimates of others' drinking than students who watched the

more conservative film. Therefore, although the film clips were not sufficient to produce significant differences between groups, they produced a trend across three variables in the direction that was predicted. Demographic comparisons revealed no significant differences between groups on gender, year in school, cumulative GPA, ethnicity, residency, Greek affiliation, and age. Furthermore, there were no differences between groups on the average number of drinks they consumed per week and their personal attitudes towards drinking. This equality between groups lends support for the idea that there was something other than pre-existing group differences and students' preconceived attitudes towards drinking, which contributed to their perceptions of how much others' drank.

Based on the results of this study, it can be concluded that the stimuli used were unsuccessful at significantly influencing students' estimates of their peers' alcohol consumption. It is possible that the stimuli used in this study were not sufficient to produce significant results. One possible reason for this is that the 15-minute movie clips shown to participants may not have been a long enough exposure to the stimuli for students to successfully incorporate the information into their estimates. On college campuses, students are generally exposed to other students drinking for a lot longer period of time than just 15 minutes. In fact, they are bombarded daily with images of students drinking, both in their actual encounters with other students and also from images created by the media. Exposing students to a longer duration of these images would more effectively mimic their real life experiences and serve to better assist them when making estimates of their peers' drinking. Prior to this study, participants had

preconceived notions of how much students drank and their attitudes towards drinking; exposing participants to a 15-minute movie clip was not a long enough experience to change those ideas. In addition, maybe participants in Group B did inflate their estimates of others' drinking but it went undetected because participants in Group A did not deflate theirs, which led them to remain similar. Students are exposed to so many images of students drinking and the *Rudy* clip portraying conservative images of college students just may not have been able compete with the majority of images of students drinking that came to mind.

Besides the length of exposure to the stimuli, another possible reason that the stimuli were ineffective is that they were shown to participants only once. It may not only be important how long the images are shown to participants but also how often they are shown for them to successfully incorporate them into their estimates. On a typical campus setting, it is unlikely that students will experience only one encounter with another student who has consumed alcohol. Students are likely to encounter their intoxicated peers once a week and sometimes even once a day. The very definition of the availability heuristic states that "it is used to evaluate the frequency or likelihood of an event on the basis of how quickly instances or associations come to mind" (Fiske et al., 1991). Instances of an event will be more likely to come to mind if they occur frequently than if they occur sporadically. Hence, when students utilize the availability heuristic, it may be the frequency of exposure that is important in making their estimates. In this study, participants were shown a one-time 15-minute movie clip. It is possible that

repeated exposure to this stimulus is needed in order to effectively influence their perceptions of others' drinking.

The results of the manipulation check indicate that the stimuli did not produce their intended effects, which is a primary reason why the hypotheses were not supported. Given the films ineffectiveness, it is possible that they did not elicit realistic images of college students or college life. In contrast to what was expected, there were no real differences between groups on their ratings of items that capture *Rudy* themes and items that capture *Animal House* themes. However, the direction of the mean scores for the items were in the direction that was predicted; participants in Group A rated items that captured *Rudy* themes as more descriptive of college students than participants in Group B, and participants in Group B rated items that captured *Animal House* themes as more descriptive than participants in Group A. This suggests that, although the underlying messages from the movies may have gotten across to participants, the images themselves just may not have been realistic enough for students to fully incorporate them into their estimates. Ironically, the movies were chosen because of their extremity, but this same extremity may have produced superficial images of college students. Also, the movies chosen are popular and well-known, leading to the possibility that participants may have seen them prior to the study. This may have influenced their opinions of the movies themselves leading them to believe they were not realistic images. Future studies should employ a manipulation check that assesses the realism and believability of the stimuli prior to carrying out the study.

A second reason that the manipulation check may have been unsuccessful at producing group differences on items that captured *Rudy* and items that captured *Animal House* is because of the actual words chosen for the list. Although unintended, some words on the list (i.e., *social*, *risk-taking*) could be descriptive of the characters and images portrayed in both movies. This may have led participants in both groups to believe that these characteristics were descriptive of the character in the given movie they watched and contributed to the insignificant finding between items. Another problem with the manipulation check was the actual words selected to describe the characteristics of college students. Some participants did not fully understand the meaning of a few of the words on the list (i.e., *industrious*, *hedonistic*). This caused confusion among participants and may have been reflected in their answers. This problem became apparent when students raised their hands to ask the meaning of the words and was also indicated by question marks next to the specific words on their questionnaires. The issue of the readability of items is not a new problem in research studies, especially informed consent forms. Young, Hooker, and Freeberg (1990) found that, when participants were given informed consent forms of either a high or low readability level, followed by a comprehension test, comprehension levels were higher for the low readability level form than for the high-level form. Thus, even research with college students should attend to the readability levels of materials.

Another reason that the stimuli may not have been effective is because of the medium chosen to portray the images. Many people have the preconceived

notion that movies are unrealistic images and unbelievable sources of truth. Students participating in this study may also have had these ideas leading them not to rely on film clips provided when making their estimates. In real life, students base their estimates of others' drinking and attitudes towards drinking on actual experiences that involve other students. These sources of information may come in the form of conversations with other students regarding alcohol, interactions with other students who are consuming alcohol, or even just observations of students who have consumed alcohol. These actual experiences are much stronger and richer sources of information than a short movie clip. It is possible that portraying similar images of liberal heavy drinking at college or the conservative academic side of college (without drinking) through a different medium, such as a slide show, would have produced more valuable and believable images of college students. If participants believed the images they saw to be realistic and a possible portrayal of life at college, maybe then they would have incorporated the information from the movies into their estimates.

Finally, the groups in this study showed large variations in how much alcohol they reported consuming on an average week. This means each group contained participants who virtually did not drink and also participants who drank heavily, resulting in estimates ranging from very low to very high. For instance, Group A contained 10 participants who reported consuming zero drinks per week and five participants who reported consuming more than 20 drinks per week, with the most being 29. Group B also contained 10 participants who reported consuming zero drinks per week and seven participants who reported consuming

more than 20 drinks per week, with the most being 35. Therefore, the range of participants' average drinks per week in Group A was from zero to 29, and the range for Group B was from zero to 35. Participants were not screened for their own alcohol use prior to participation in this study, which could be a potential contributor to the large variation found among groups.

The groups in this study also showed large variations in their estimates of others' drinking. The literature suggests that there is a direct relationship between how much alcohol students drink and how much they perceive others as drinking (Borsari & Carey, 2001). Hence, the more students inflate the level of perceived alcohol use by others, the more students themselves drink. This could have directly affected the results of this study because heavy drinkers would assume that others also drink heavily, and their estimates of others' alcohol use would be high (Kypri & Langley, 2003). On the other hand, non/light drinkers would estimate that others are also non/light drinkers, and their estimates of others' alcohol use would be low. In addition, students who consume high amounts of alcohol are likely to associate with other students who also drink high amounts of alcohol, and students who do not consume alcohol or consume very little are likely to associate with other students who also drink no or very little alcohol (Kypri & Langley, 2003). Hence, students will base their estimates of others' drinking on the amount of alcohol consumed by the people they most often associate with, and they will likely estimate that they drink similar amounts as themselves.

The importance of baseline drinking levels was demonstrated in exploratory analyses. That is, the heaviest drinkers in Group B reported significantly higher estimates of their close friends' drinking than the heaviest drinkers in Group A. The heavy drinkers who watched the *Animal House* film were most susceptible to the movie's cues because the images shown may have been closely related and most in line with their own opinions and attitudes. Students who consume high amounts of alcohol often assume that others do as well, so the movie clip may have just further reconfirmed what the students already thought to be a true portrayal of college life. Perhaps the lighter drinkers who watched the *Rudy* film clip did not decrease their estimates because the movie clip may not have been in line with their original opinions and attitudes. Although they choose not to drink (or drink lightly), they are still aware of the reality that their peers do drink and drink often. The film clip may just not have been a strong enough image to compete with the preconceived notions that they have about college student's alcohol consumption. The significant effect for heavy drinkers was only seen in their estimates of their close friends' drinking. This may be explained by the fact student who consume high amounts of alcohol are likely to associate with other students who also drink high amounts of alcohol. Therefore, they assume that their close friends drink as much or even more than they do. However, students are less familiar with the drinking habits of the average Syracuse University student, as well as the average United States students, causing their estimates of those students drinking to be pure guesses.

Study Limitations

The limitations of the study should be acknowledged. One of the most obvious limitations of this study is the relatively small sample size. Of the 100 undergraduate students originally signed up for this study, only 83 participated. Syracuse University contains more than 10,000 students, so that 83 participants account for less than one percent of the student population. An additional concern for the sample size comes from the actual data collected. Although neither of the hypotheses was supported, based on the direction the data were heading, it is possible that a larger sample size would have produced significant results. A larger sample size may have helped to make these differences between groups more detectable because increasing the sample size serves to increase the power of the test. Using a significance test with low power makes it unlikely a significant effect will be found, even if the truth is far from the null hypothesis (Moore & McCabe, 2003). A null hypothesis that is, in fact, false can become widely believed if repeated attempts to find evidence against it fail because of low power.

Another limitation of this study is the time of the year that it took place. It was carried out during a week that contained a lot of excitement as well as distractions for students. It was the week after students returned from spring break, the week of the Men's Basketball NCAA tournament, and the week of Good Friday. During the last two days that the study was run, there were two NCAA Sweet Sixteen games and a NCAA Elite Eight game that were being played in the Syracuse University Carrier Dome. All of these events could have led to the drop

out of several participants originally signed up for the study. Many students signed up over a week in advance for the study, not realizing that it was the week of the NCAA tournament, for which students had tickets, or that it was the week of Good Friday, when many students planned to go home. Hence, in addition to students failing to show up for the study, many cancelled due to the actual time that it took place. Also, because of the NCAA game, the doors to the building where the sessions were taking place were locked and participants could not get in, contributing to the drop-out rate.

In addition to the drop-out rate, participants may have been drinking more heavily that week than normal due to the party-like atmosphere influenced by the basketball games. As a result, scenes of students drinking were all over campus and in the nearby community. This would have been another competing force to the film clip of *Rudy*. The film clip of *Rudy* that was shown to participants was selected because it portrayed a side of college where students were not concerned with drinking but rather focused on their school work and future. It was predicted that making students aware of these conservative images would serve to influence their perceptions of college students. Specifically, *Rudy* was supposed to show that not all students at college drink and participants were supposed to use these conservative images to base their judgments on leading them to lower their estimates of others' drinking and perceive them as having less permissive attitudes towards drinking. However, these messages may have been less powerful due to the competing images that students were exposed to on campus and in the community of numerous people drinking. Hence, the competing

environmental messages may have served as potentially confounding factors to the study.

Directions for Future Research

Based on the many possible reasons for the ineffectiveness of the stimuli in this study, it is recommended that further research employ new manipulations. Three possible ways in which this could be done is to (a) increase the length of the stimuli, (b) repeat participant's exposure to the stimuli, and (c) vary the sources of media utilized. As mentioned, the 15-minute movie clip may have been too short of an exposure to successfully influence participants' perceptions of how much other students drink and their attitudes towards drinking. Therefore, it would be interesting to examine the effects of different length movie clips on participants' estimates of others' drinking. Participants could be shown increasingly longer movie clips to determine whether or not the length of the stimuli is an important factor in influencing participant's perceptions. It would be hypothesized that the longer participants are exposed to the stimuli, the more their perceptions are likely to be influenced.

Repeated exposure is another area of research that would be beneficial to investigate to determine if the availability heuristic is actively affecting students while they make their estimates of others' drinking. It is possible that, in order for students to efficiently incorporate the information from the stimuli into their estimates, the stimuli must mimic their real life experiences as much as possible. That is, students might need to be exposed to others' drinking for more than a one-time 15-minute movie clip. In follow-up studies, participants could either be

shown the same movie clip or different movie clips that portray the same message for 30 minutes a day, repeated over a period of two weeks. An alternative way to approach the issue of repeated exposure would be to use a mixture of different stimuli that varied in content but all portrayed the desired impression. In either case, it would be hypothesized that the more exposure students have to the stimulus, the more their perceptions are likely to be influenced.

In future studies regarding the effects of the availability heuristic on student's judgments of others' alcohol consumption, the stimulus itself could be varied. It is possible that using movie clips in general is an ineffective way of portraying college life, due their artificiality. The stimuli used have to be as realistic as possible, a close reproduction of student's real life experiences in order to better assist them when making estimates of their peers drinking. Given that the movie clips in this study failed to produce significant differences between groups, it is recommended that future studies vary the source of media utilized. Instead of showing participants movie clips, different types of media may be more influential, such as a slide show, an auditory story, a written story, or a play. It is important for the stimuli used to be a strong and powerful source of information for students. If they do not believe in its value or truth, they will not be very likely to utilize it when forming their estimates.

Based on the findings of the exploratory analyses, future research may want to split up groups before the manipulation based on participants drinking levels (i.e., light drinkers and heavy drinkers) and then compare their perceptions of other student's drinking and attitudes towards drinking. One way to approach

the study would be to place heavy drinkers in one group and non/light drinkers in another group, and have each group watch a movie that portrayed liberal heavy drinking at college. Then, using the same two groups with different participants, have each group watch a movie that portrayed the conservative academic side of college. It would be predicted that heavy drinkers who watched the liberal drinking movie would increase their estimates more than the non/light drinkers who watch the same movie. On the other hand, it would be predicted that non/light drinkers would decrease their estimates more than heavy drinkers after watching the conservative film. It may be the type of drinker that the participant is paired with the type of movie that they watch, that is most influential and responsible for producing group differences in students estimates of others' drinking.

Conclusion

In conclusion, the hypotheses were not confirmed by the results in this study. However, it can not be ruled out that the availability heuristic still influences students' perceptions when they are trying to estimate how much other students drink, as well as their attitudes towards drinking. It is recommended that future studies improve on some of the limitations of this study. Specifically, a larger sample size should be utilized for more power to detect effects, and the strength of the manipulation should be enhanced.

It is important to know the methods students utilize when making their estimates of others' alcohol consumption because it can help to further understand why students drink in the first place. If the availability heuristic is at work, it

means that students are using images they have encountered of other students' drinking to make their estimates. The more often they come into contact with these images, the higher their estimates will be of others' drinking. However, previous literature shows that, if students think their peers drink more than they actually do, it will increase how much they drink (Borsari & Carey, 2001). As students increase their drinking to be more in line with how much they believe other student's are drinking, the images of their increased drinking will be available for other students to use when estimated drinking norms. Therefore, it appears to be a vicious cycle that college student cannot escape. To intervene, somehow the salient and accessible images of other students' drinking need to be minimized, so that student's will not rely on them while making estimates of others' alcohol consumption. As these images begin to decrease, the overestimation found by college students of others' drinking may decrease as well, in effect, serving to decrease their own drinking. As students decrease how much alcohol they think their peers are consuming, the less they will drink in general. Also, the less permissive students believe their peers attitudes to be, the less permissive their attitudes will end up being as well.

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Table 1. *Descriptive Variables (% and [SD]) for Groups A and B*

Descriptor	Group A (n=43)	Group B (n=39)
Gender, % Female	56	72
Year in college, % Freshman	91	79
Cumulative GPA		
% 3.6 - 4.0	37	28
% 3.1 - 3.5	37	46
% 2.6 - 3.0	26	26
Ethnicity, % Caucasian	86	74
Residency, % On-campus Dorm	91	92
Greek Affiliation, % Not a Member	74	77
Age	18.46 (0.59)	18.72 (0.86)
Drinks per week	8.46 (8.16)	10.31 (10.51)
Heaviest week	15.87 (14.36)	15.82 (15.48)
Personal Attitudes	1.86 (0.52)	1.85 (0.54)

Note: Group A saw *Rudy*. Group B saw *Animal House*.

Table 2. *Manipulation Check (M and [SD]) for Groups A and B*

Characteristic	Group A (n=43)	Group B (n=39)
Industrious	3.19 (0.66)	3.08 (0.70)
Fun-loving	2.44 (1.00)	2.26 (1.31)
Intelligent	2.60 (0.76)	2.67 (0.96)
Irresponsible	3.49 (1.08)	3.50 (0.84)
Risk-taking	2.65 (0.87)	2.54 (0.97)
Social	2.02 (1.24)	2.00 (1.30)
Goal directed	2.65 (0.84)	2.91 (1.06)
Capable of multi-tasking	2.65 (0.84)	2.85 (0.96)
Flirtatious	2.30 (0.83)	2.44 (1.14)
Unconventional	3.65 (1.09)	3.62 (1.11)
Determined	2.86 (0.74)	3.08 (1.01)
Mature	3.26 (0.85)	3.58 (.92)
Hedonistic	3.41 (0.77)	3.16 (1.08)
Motivated	2.86 (0.83)	3.08 (0.81)
Careless	3.30 (1.01)	3.28 (0.94)
Organized	3.33 (0.87)	3.43 (0.75)
Rowdy	2.65 (0.95)	2.59 (1.04)
Reckless	3.30 (0.86)	3.19 (1.04)
Sum Rudy Theme	2.92 (0.51)	3.08 (0.58)
Sum Animal House Theme	2.92 (0.57)	2.86 (0.57)

Note: Group A saw *Rudy*. Group B saw *Animal House*.

Table 3. *Peer Estimates (M and [SD]) for Groups A and B*

Peer Type	Group A (n=43)	Group B (n=39)
Close Friends Drinks	15.42 (11.38)	18.15 (11.92)
SU Student Drinks	19.31 (8.37)	20.10 (8.16)
US Student Drinks	20.26 (9.79)	20.99 (8.26)
SU Student Attitude	2.72 (0.91)	2.49 (0.68)

Note: Group A saw *Rudy*. Group B saw *Animal House*. SU = Syracuse University. US = United States.

Appendix A

Demographics

Please check or fill in the answers that best describe you.

1) Age: _____ Years

2) Gender:

_____ Male (0) _____ Female (1)

3) Year in college:

_____Freshman (1) _____Sophomore (2) _____Junior (3) _____Senior (4)

_____Graduate (5)

4) Cumulative GPA:

_____≤1.5 (0) _____1.6-2.0 (1) _____2.1-2.5 (2)

_____2.6-3.0 (3) _____3.1-3.5 (4) _____3.6-4.0 (5)

5) Do you consider yourself Hispanic or Latino?

_____Yes (1) _____No (0)

6) Choose one racial group that best describes you:

_____ White (1)

_____ Black or African American (2)

_____ Asian (3)

_____ Native American or Native Alaskan (4)

_____ Native Hawaiian or Pacific Islander (5)

_____ Other (6) _____ (please specify)

7) Do you consider yourself multiracial?

_____ Yes (1) _____ No (0)

8) Current Residence:

_____ On-campus dormitory (1) _____ Off-campus house or apartment (2)

_____ Fraternity house (3) _____ Sorority house (4)

_____ With family (5)

_____ Other (6) _____(please specify)

9) Your height: _____ Feet _____ Inches

10) Your weight: ___ ___ ___ Lbs

11) Are you a member or pledge of a social fraternity or sorority?

_____ Not a member (0) _____Currently pledging (1) _____ Member (2)

1 standard drink =	12 oz beer 4 oz wine 1 oz shot of liquor, straight or in a mixed drink

College Drinking Norms

1) Think back over the past 30 days when making the following estimate. First, think about the days of the week that your close friends drink. Then, estimate the average number of drinks that your close friends normally consumed on those days. Write that number in the spaces for each of the days below.

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday

2) Think back over the past 30 days when making the following estimate. First, think about the days of the week that the average student at Syracuse University drinks. Then, estimate the average number of drinks that the average student at Syracuse University normally consumed on those days. Write that number in the spaces for each of the days below.

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday

3) Think back over the past 30 days when making the following estimate. First, think about the days of the week that the average U.S. college student drinks. Then, estimate the average number of drinks that the average U.S. college student normally consumed on those days. Write that number in the spaces for each of the days below.

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday

1 standard drink =	12 oz beer 4 oz wine 1 oz shot of liquor, straight or in a mixed drink

4) Think about your drinking during the last month (i.e., the past 30 days) when making the following estimate. First, think about the days of the week that you drink. Then, estimate the average number of drinks that you typically consumed on those days and write them in the space for each day.

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday

5) Again, think about the past 30 days and the one week when you consumed the most alcohol. Please indicate the number of alcoholic drinks you consumed each day during the week of your HEAVIEST alcohol consumption in the past month.

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday

6) How typical was your drinking during last month compared with your usual drinking?

_____ I drank much more last month than I usually drink (4)

_____ I drank slightly more last month than I usually drink (3)

_____ I drank about the same last month as I usually drink (2)

_____ I drank slightly less last month than I usually drink (1)

_____ I drank much less last month than I usually drink (0)

7) Which statement below about drinking alcoholic beverages do you feel best represents your own attitude? (Check one)

_____ Drinking is never a good thing to do. (0)

_____ Drinking is all right but a person should not get drunk. (1)

_____ Occasionally getting drunk is okay as long as it doesn't interfere with academics or other responsibilities. (2)

_____ Occasionally getting drunk is okay even if it does interfere with academics or other responsibilities. (3)

_____Frequently getting drunk is okay if that's what the individual wants to do. (4)

8) Which statement below about drinking alcoholic beverages do you feel best represents the most common attitude among students in general at SU? (Check one)

_____ Drinking is never a good thing to do. (0)

_____ Drinking is all right but a person should not get drunk. (1)

_____ Occasionally getting drunk is okay as long as it doesn't interfere with academics or other responsibilities. (2)

_____ Occasionally getting drunk is okay even if it does interfere with academics or other responsibilities. (3)

_____Frequently getting drunk is okay if that's what the individual wants to do. (4)

9) Please indicate how well each of these characteristics describes college students, in your opinion. (Circle one)

1 = Extremely Descriptive

2 = Very Descriptive

3 = Somewhat Descriptive

4 = Somewhat Undescriptive

5 = Very Undescriptive

6 = Extremely Undescriptive

a. Industrious 1----------2----------3----------4----------5----------6

b. Fun-loving	1----------2----------3----------4----------5----------6
c. Intelligent	1----------2----------3----------4----------5----------6
d. Irresponsible	1----------2----------3----------4----------5----------6
e. Risk-taking	1----------2----------3----------4----------5----------6
f. Social	1----------2----------3----------4----------5----------6
g. Goal-directed	1----------2----------3----------4----------5----------6
h. Reckless	1----------2----------3----------4----------5----------6
i. Flirtatious	1----------2----------3----------4----------5----------6
j. Unconventional	1----------2----------3----------4----------5----------6
k. Determined	1----------2----------3----------4----------5----------6
l. Mature	1----------2----------3----------4----------5----------6
m. Hedonistic	1----------2----------3----------4----------5----------6
n. Motivated	1----------2----------3----------4----------5----------6
o. Careless	1----------2----------3----------4----------5----------6
p. Organized	1----------2----------3----------4----------5----------6
q. Rowdy	1----------2----------3----------4----------5----------6
r. Capable of multi-tasking	1----------2----------3----------4----------5----------6

Thank you for your participation!!!

Appendix B

Consent Form
College Drinking Norms
Investigator: Jennifer L. McEnroy
Supervisor: Kate B. Carey, Ph.D.
(774) 487-1561

This form will describe the procedures of the research study that you are about to participate in, as well as your rights as a research participant. If you have any questions, please call the number listed above and the investigator will be happy to clarify any concerns. You may also choose to call the Syracuse University Institutional Review Board at (315) 443-3013.

You are invited to participate in a research study about college drinking norms at Syracuse University. Participation in this study will involve viewing a 15-minute movie clip and completing several questionnaires about your alcohol use, including quantity of your alcohol consumption as well as quantity of alcohol consumption by your peers, your attitude towards drinking, and your opinion of characteristics possessed by college students. You will also be asked to fill out a questionnaire about yourself, including your age, gender, your in college, ethnicity, residence, and Greek affiliation. Upon completion of the questionnaires you will receive 1 hour of research credit towards your Psychology 205 class. You are free to withdraw from this study at any time, without prejudice.

All information collected in connection with this study will be kept confidential. Code numbers will be used to identify your questionnaires and your name will not be associated with any of your responses. Your questionnaires will be kept by the investigator under lock and key. Your responses will not be shared with any other department or offices at Syracuse University.

It is unlikely that you will experience any distress as a result of your participation in this study. However, if you do feel that you need to talk to a professional about any concerns you might have, please call the Psychological Services Center at (315) 443-3595 or the Counseling Center at (315) 443-4715.

We would appreciate your cooperation in answering all of the questions; however, you are free to refrain from answering any of them at your own discretion. There are no direct benefits to you of participating in this study, other than earning extra course credit. However, you will be helping us better understand how college students estimate drinking norms.

Your decision of whether or not to participate will not affect your future relations with Syracuse University. Your signature indicates that you have read the information provided and have decided to participate. You may withdraw from the study at any time without prejudice after signing this form, should you choose

to discontinue in this study. If you decide to participate, we ask that you sign this consent form, view the movie clip, and complete the questionnaires that will be distributed.

Thank you in advance for participating, and we appreciate your time and assistance in our research study.

****

By signing this form, I am indicating that all of my questions concerning participation in this study have been answered, and that I am willingly participating in this experiment. I also certify that I am at least 18 years old, having been born on _____/_____/_____.

_____ _____

Participant Signature Date

_____

Name of Participant (please print)

_____ _____

Jennifer L. McEnroy Date