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The Role of Mindfulness and Acculturation in Binge Drinking Behavior Among Asian-American College Students

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Pacific University

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The Role of Mindfulness and Acculturation in Binge Drinking Behavior Among Asian-American College Students

Abstract
Binge drinking is a considerable problem for many college and universities. Alcohol use, and accompanying consequences have often been minimized when considering Asian-Americans due to a lower rate of alcohol dependence. The prevalence of alcohol related problems is unclear however, because of the vast number and differences between Asian subgroup cultures. Furthermore, it has also been suggested that mindfulness and acculturation both moderate alcohol use and binge drinking behavior. Eighty-five Asian-American undergraduate students completed surveys that measured acculturation, mindfulness, and drinking behavior. The analysis for subgroup differences in alcohol consumption was not significant (F(9,75) = .66, p = .74). Subgroup differences for binge drinking however, were significant (F(9,75) = 2.11, p = .04) with Hmong students reported the greatest frequency of binge drinking (M = 3.5, SD = .71) and Taiwanese, Japanese, and Vietnamese all reported the lowest frequency of binge drinking (M = 1.0, SD = 0.0). Mindfulness was found to be a significant negative predictor of binge drinking behavior (β = -.30, p = .003), whereas acculturation was not (β = -.10, p = .32). The interaction between alcohol use and mindfulness was not significant, nor was the interaction between alcohol use and acculturation. Thus it is can be interpreted that mindfulness is a negative predictor of binge drinking behavior however; higher awareness does not necessarily cause less binge drinking behavior.

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THE ROLE OF MINDFULNESS AND ACCULTURATION IN BINGE DRINKING BEHAVIOR AMONG ASIAN-AMERICAN COLLEGE STUDENTS

A DISSERTATION

SUBMITTED TO THE FACULTY

OF

SCHOOL OF PROFESSIONAL PSYCHOLOGY

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BY

DEAN CHARLES

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DOCTOR OF PSYCHOLOGY

JULY 16, 2010

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# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABSTRACT</td>
<td>3</td>
</tr>
<tr>
<td>ACKNOWLEDGMENTS</td>
<td>4</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td>5</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td>6</td>
</tr>
<tr>
<td>INTRODUCTION</td>
<td>7</td>
</tr>
<tr>
<td>Summary</td>
<td>23</td>
</tr>
<tr>
<td>Statement of hypotheses</td>
<td>23</td>
</tr>
<tr>
<td>MATERIALS AND METHOD</td>
<td>24</td>
</tr>
<tr>
<td>Measures</td>
<td>24</td>
</tr>
<tr>
<td>Procedure</td>
<td>27</td>
</tr>
<tr>
<td>Design</td>
<td>28</td>
</tr>
<tr>
<td>RESULTS</td>
<td>28</td>
</tr>
<tr>
<td>Analyses of Variance</td>
<td>30</td>
</tr>
<tr>
<td>Hierarchical linear regression</td>
<td>32</td>
</tr>
<tr>
<td>DISCUSSION AND CONCLUSION</td>
<td>34</td>
</tr>
<tr>
<td>Limitations</td>
<td>36</td>
</tr>
<tr>
<td>Future implications</td>
<td>37</td>
</tr>
<tr>
<td>REFERENCES</td>
<td>39</td>
</tr>
<tr>
<td>APPENDICES</td>
<td></td>
</tr>
<tr>
<td>A. ALCOHOL USE DISORDERS QUESTIONNAIRE</td>
<td>46</td>
</tr>
<tr>
<td>B. MINDFULNESS ATTENTION AWARENESS SCALE</td>
<td>48</td>
</tr>
<tr>
<td>C. SUINN-LEW SELF-IDENTITY ACCULTURATION SCALE</td>
<td>50</td>
</tr>
<tr>
<td>D. DEMOGRAPHIC FORM</td>
<td>59</td>
</tr>
<tr>
<td>E. RECRUITMENT LETTER</td>
<td>60</td>
</tr>
<tr>
<td>F. STANDARD DRINK CHART</td>
<td>61</td>
</tr>
</tbody>
</table>
ABSTRACT

Binge drinking is a considerable problem for many college and universities. Alcohol use, and accompanying consequences have often been minimized when considering Asian-Americans due to a lower rate of alcohol dependence. The prevalence of alcohol related problems is unclear however, because of the vast number and differences between Asian subgroup cultures. Furthermore, it has also been suggested that mindfulness and acculturation both moderate alcohol use and binge drinking behavior. Eighty-five Asian-American undergraduate students completed surveys that measured acculturation, mindfulness, and drinking behavior. The analysis for subgroup differences in alcohol consumption was not significant ($F(9,75) = .66, p = .74$). Subgroup differences for binge drinking however, were significant ($F(9,75) = 2.11, p = .04$) with Hmong students reported the greatest frequency of binge drinking ($M = 3.5, SD = .71$) and Taiwanese, Japanese, and Vietnamese all reported the lowest frequency of binge drinking ($M = 1.0, SD = 0.0$).

Mindfulness was found to be a significant negative predictor of binge drinking behavior ($\beta = -.30, p = .003$), whereas acculturation was not ($\beta = -.10, p = .32$). The interaction between alcohol use and mindfulness was not significant, nor was the interaction between alcohol use and acculturation. Thus it is can be interpreted that mindfulness is a negative predictor of binge drinking behavior however; higher awareness does not necessarily cause less binge drinking behavior.

Keywords/subject terms: Asian, Mindfulness, Acculturation, Binge drinking, College students
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# LIST OF TABLES

<table>
<thead>
<tr>
<th>Number</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 1 Means, Standard Deviations, Skewness, and Kurtosis by Variable</td>
<td>28</td>
</tr>
<tr>
<td>Table 2 ANOVA for alcohol consumption</td>
<td>29</td>
</tr>
<tr>
<td>Table 3 ANOVA for binge drinking</td>
<td>29</td>
</tr>
<tr>
<td>Table 4 Hierarchical Regression Analysis Predicting Binge Drinking</td>
<td>32</td>
</tr>
<tr>
<td>Behavior from Mindfulness, Acculturation, and their Interaction</td>
<td></td>
</tr>
<tr>
<td>With Alcohol Use</td>
<td></td>
</tr>
</tbody>
</table>
LIST OF FIGURES

<table>
<thead>
<tr>
<th>Number</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 1 Asian subgroup binge drinking means</td>
<td>32</td>
</tr>
</tbody>
</table>
INTRODUCTION

The Asian population in the United States is projected to double between the year 1990 and the year 2020 (Penn, Kar, Kramer, Skinner, & Zambrana, 1995; as cited in Hahm, Lahiff, & Guterman, 2004). Despite the fast growth and large population of Asian Americans, there has not been much research focused on this population regarding health risk factors (Hahm, et al., 2004).

Binge drinking is especially problematic on college campuses, and is the most significant public health problem for college students (Wechsler et al., 2002). College students are more likely than same aged peers who do not attend college to exhibit a pattern of binge drinking (Wechsler, Dowdall, Davenport, & Castillo, 1995). Researchers suggest that much of the binge drinking problem on college campuses can be attributed to environmental factors such as college drinking traditions, lax enforcement of drinking policies by colleges, and cheap alcohol that is easily accessible (Chaloupka & Wechsler, 1996; Wechsler et al., 2002). According to the Transition Catalyst Model, cultural norms promote heavy drinking patterns as a “rite of passage” in college, and this may encourage heavy drinking in students who want to engage in the “college experience” (Schulenberg & Maggs, 2002).

Leeman and Wapner (2001) conducted a nation-wide survey of first-year undergraduates exploring some factors related to college student drinking. In this study, 436 students completed a series of measures that included a Core Drug and Alcohol Survey and a General Well-Being (GWH) survey. In their sample, participants reported drinking an average of 2.8 drinks per week, 20.4% reported a driving under the influence of alcohol in the past year, and 26.2% reported doing something they regretted while
drinking. They also stated that students who reported drinking zero to one or three to four alcoholic drink per week reported lower GWH scores (e.g. higher stress) than students who reported drinking two alcohol drinks per week. Finally, researchers reported that students who participate in intramural or club activities reported higher GWH (e.g. less stress) than students who did not participate in such activities.

Binge drinking is associated with many health consequences for youth, including motor vehicle accidents, alcohol toxicity, risky sexual behavior, and future alcohol dependence or abuse (Hahm et al., 2004; Wechsler & Nelson, 2001). Binge drinking also causes problems for students who do not binge drink. Students who do not binge drink, but attend schools with high levels of binge drinking are more likely to experience problems due to binge drinking (e.g. property damage, assault, sleep/study disturbance) (Wechsler & Nelson, 2001; Wechsler et al., 1995). Prevention efforts put in place in the 1990s tend to focus on educating and changing drinkers’ perceptions of drinking and alcohol, and imposing sanctions for more severe drinking violations. These prevention efforts do not seem to be as effective at preventing binge drinking as originally in that the rate of binge drinking has not changed significantly since 1993 (Wechsler et al., 2002).

One change that has occurred however, is that drinking patterns on college campuses have become more dichotomous. According to The Harvard School of Public Health’s College Alcohol Study (CAS), there was an increase in the number of students who abstain from alcohol use as well as those who report frequent binge drinking and drinking for the purpose of becoming intoxicated (Keeling, 2002).
Some researchers argue that the recent media exposure of the reports of binge drinking on college campuses (e.g. CAS) has made binge drinking seem normative. The use of the term binge drinking has increased dramatically in popular media since the early 1990’s, from fewer than 10 mentions of binge drinking in 1990, to more than 100 mentions in 1999 (Wechsler & Nelson, 2001).

**Treating college drinking**

Many colleges and universities have policies in place to discourage drinking by their students. Many also have educational programs in place to inform students of the dangers of alcohol and other drug use. These methods of addressing harmful college student drinking are generally ineffective. DeJong, Larimer, Wood, and Hartman (2009) conducted a study with the National Institute on Alcohol Abuse and Alcoholism (NIAAA) to increase the effectiveness of campus interventions for student drinking.

In this research project 15 colleges and universities were paired with one of five research teams to individualize and implement empirically supported interventions. These interventions were chosen based on an extensive literature reviewed done by the researchers, after which they divided interventions into four categories.

The first category was “Evidence of Effectiveness Among College students.” These interventions consisted of the Alcohol Skills Training Program (Baer, et al., 1992) and the Brief Alcohol Screening and Intervention for College Students (BASICS; Marlatt, et al., 1998; Baer, Kivlahan, Blume,McKnight, & Marlatt, 2001). These interventions tended to focus on building motivation for change, managing stress, and changing drinking expectancies. The second category was “Effectiveness with General Populations.” These interventions consisted of things that reduced harmful drinking
behavior in the general population but had not yet been examined specifically with college students. Examples of these interventions were increasing the cost of alcohol and strict enforcement of minimum drinking age laws. The third tier, “Evidence of Promise,” were interventions that had case study support or that sounded “theoretically sound” by the researchers. These interventions were mostly campus policies and media campaigns. The final category of interventions was called “Evidence for Ineffectiveness.” These interventions mostly included only education, either through curriculum or events like an “Alcohol Awareness Week.”

The next step was for researchers to implement interventions on various levels (e.g. individual, group, and community). Researchers conducted individual motivational interviewing, as well as, group sessions. They held community meetings to inform students of laws, policies, and enforcement of alcohol related issues. One group of researchers also created a handbook of information and issues related to alcohol consumption that was sent to both students and parents before the first day of school.

DeJong, et al. (2009) reported that despite effectiveness of many of the interventions, the practical implementation of them would be too labor and time intensive to be realistic solution to college drinking problems. The researchers suggested future studies to determine how to make interventions like BASICS and the Alcohol Skills Training Program more time, cost, and labor effective.

*Brief Alcohol Screening and Intervention for College Students (BASICS; Marlatt, et al., 1998; Dimeff, Baer, Kivlahan, & Marlatt, 1999).* The Brief Alcohol Screening and Intervention for College Students is a harm reduction approach to reducing harmful
Mindfulness in binge drinking among college students. As stated in Dejong et al. (2009), the BASICS program is empirically supported for use with general college student populations.

In general this approach aims to reduce resistance and increase openness to change. This program also recognizes that many college students are in Precontemplative or Contemplative Stage of Change (Whiteside, Cronce, Pedersen, & Larimer, 2010; Prochaska & DiClemente, 2005). It also utilizes many Motivational Interviewing techniques to create intrinsic motivation for change (Arkowitz & Westra, 2009). The BASICS program is a two session intervention that includes an assessment and a feedback session. The goals of the assessment session are to build rapport, get a sense of the student’s impressions of “normative drinking,” and review the concept of a “standard drink.” During this session students are also asked to document their drinking on monitoring cards. During the feedback session, MI techniques are used when giving feedback regarding personalized alcohol absorption rates, personal risks, and perceived versus actual drinking norms. During this session facilitators will also explore the students reasons to drink and discuss alcohol expectancy effects (Whiteside, et al., 2005).

Misconceptions of alcohol consumption in Asian populations

Weschler, Dowdall, Maenner, Gledhill-Hoyt, & Lee (1998) reported that Asian-American college students were about half as likely to report binge drinking than Caucasian college students (22-25% and 47-48% respectively). As stated above these numbers might be misleading because the term “Asian” includes many different countries and unique cultures (e.g. Korea, China, Japan, Vietnam, Cambodia, etc). Moreover, there is very little information in regards to binge drinking rates of the various subgroups. For
example, Liu and Iwamoto (2007) performed a study involving the drinking habit among Asian-American college men. They reported that almost 48% of Asian-American college men drink alcohol while 27% engage in binge drinking behavior. This study reports the specific subgroups from which they gathered their participants but there is not mention of how the alcohol consumption or binge drinking rates differ. Some researchers argue that combining Asian subgroups could result in misleading conclusions (Uehara, Takeuchi, & Smukler, 1994). The lifelong prevalence for alcohol abuse and/or dependence for example, is 23% for Koreans and 7% for Chinese (Helzer, Canino, Yeh, & Bland, 1990). If Helzer and colleagues (1990) had decided to combine the Asian subgroups they would have concluded that Asians had a lifelong prevalence for alcohol abuse and/or dependence of 15%, which would not accurately represent either subgroup.

On a population level, it appears that a lower percentage of Asians-Americans drink alcohol compared to Caucasians, however binge drinking is a serious problem among Asians who do drink (Barnes & Welte, 1986). Asian-American adolescents who do drink tend to binge drink more often and consume more alcohol per binge (Barnes & Welte, 1986; Makimoto, 1998). Zane and Kim (1994) reported that despite a lower percentage of drinkers, Asians that did drink tended to drink almost twice as much alcohol per day. In addition, D’avanzo, Fruy, and Froman (1994) reported that drinking patterns found in Asian-American adolescents who drink alcohol tend to exhibit drinking patterns similar to Caucasian adolescents. Thus, it appears that despite fewer drinkers as a whole, binge drinking is a serious problem among Asian-American youth who engage in drinking activities. Furthermore, at least one study has suggested that alcohol use among Asian-American men is much closer to the national average than previously thought (Liu
Mindfulness in binge drinking & Iwamoto, 2007). These findings suggest that binge drinking among Asian-American youth is a more serious problem than previously thought.

Some researchers have suggested that drinking problems are more prevalent among Asian populations than previously thought due to the stigma of admitting problems to people outside of the family. For many Asian cultures it is shameful to admit problems and seek treatment (James, Kim, & Moore, 1997). Additionally, there is some evidence to suggest that alcohol dependence is becoming increasingly problematic in China (Guo, Xu, & Lee, 2009). The authors suggest that this increase in alcohol dependence is increasing partially because of certain cultural believes regarding the health benefits of alcohol. They suggest however, that this rise in alcohol dependence is also due to an increasingly lax attitude towards binge drinking in China, which is more similar to the attitudes held in the United States.

Factors that influence drinking habits

Genetics. Researchers have suggested that genetic factors play a major role in the rate of alcohol use among Asian populations (Makimoto, 1998). Luczak, Wall, Shea, Byun, and Carr (2001) examined the genetic and ethnic differences of binge drinking in Chinese, Korean, and Caucasian samples. They found that Caucasiains have the highest binge drinking rates, followed by Koreans, then Chinese. Much of the differences were due to genetic differences commonly found in northeastern Asian populations that prevent to metabolism of acetaldehyde. The genetic difference was most common in Chinese participants, then Korean participants, and Caucasian participants did not have this genetic trait. Luczak and colleagues (2001) argue that not all of the binge drinking differences between the different ethnic groups can be accounted for by genetic
differences, and that other factors (e.g. acculturation level, religion, and country of origin) may be important for understanding binge drinking among Asian subgroups.

Alcohol is broken down in the body by two enzymes. The first is alcohol dehydrogenase (ADH), which converts alcohol to acetaldehyde. The second is aldehyde dehydrogenase (ALDH), which converts acetaldehyde to acetate. ALDH is encoded by the ALDH2*2 allele, and is dominant, which means that one will exhibit an ALDH2 deficiency if they have even one ALDH2*2 allele (Wall, Thomasson, Schuckit, & Ehlers, 1992). An ALDH2 deficiency leads to the accumulation of acetaldehyde which can cause a flushing reaction that is sometimes characterized by nausea, dizziness and rapid heartbeat. The reaction to alcohol caused by an ALDH2 deficiency is similar to the reaction caused by disulfiram (Antabuse) (Wall et al., 1992). Most people of non-Asian origins do not have an ALDH2 deficiency and therefore do not have difficulty breaking acetaldehyde into acetate. However, an ALDH2 deficiency is prevalent in up to 50% among various Northeastern Asian populations (Korean, Chinese, Japanese) (Pi & Gray, 2000; Wall et al., 1996; Luczak, Wall, Cook, Shea, Carr, 2004).

Asian college students with at least one ALDH2*2 allele are more likely to be regular drinkers and engage in binge drinking episodes (Tu & Israel, 1995; Wall, Shea, Chan, & Carr, 2001). It is likely that having at least one ALDH2*2 allele affects drinking behavior in two ways; the first is by directly influencing alcohol metabolism, and the second is via parental modeling because a person with at least one ALDH2*2 allele must have a parent with at least one ALDH2*2 allele, which would influence the parent’s drinking habits.
Most of the alcohol one ingests is metabolized by ADH and ALDH, however the enzyme P450-2E1 (CYP2E1) will also oxidize alcohol into acetaldehyde after large amounts of alcohol consumption (Julien, 2005; Lieber, 1997). About 40% of Japanese men have the c2 allele, an allele that encodes CYP2E1. Like the ALDH2*2 allele, the c2 allele is very uncommon in Caucasians, most of whom have CYP2E1 encoded by the c1 allele. Unlike the ALDH2*2 allele however, the c2 allele of the CYP2e1 gene has been shown to promote alcohol consumption (Sun, Tsuritani, & Yamada, 2002). Despite the link between the c2 allele and increased alcohol consumption, it is unclear if there is a connection between the c2 allele and problem drinking (Sun et al., 2002). The c2 allele may allow people to drink more because of its ability to break down alcohol more quickly. The c2 allele would not decrease the amount of acetaldehyde produced or the subsequent negative effects of alcohol consumption. The c2 allele however, could be part of the explanation for why, as stated earlier, of Asians who drink, more tend to binge drink and consume more drinks per episode.

**Acculturation.** As stated earlier, genetics does not account for all of the variation related to binge drinking among Asian American drinking. There is often a large variation in level of acculturation among different Asian subgroups. Education and economic status (two of the more widely accepted measures of acculturation) vary considerably between different Asian subgroups. According to Bennett (1995) only 31 percent of the Hmong population over 25 years old completed high school compared to 88 percent of the Japanese population. Certain Asian subgroups (e.g. Japanese, Filipino, and Indian) have higher median family incomes than Caucasian families, while Southeastern Asian groups (e.g. Vietnamese, Cambodian) often have much lower median
family incomes, and higher poverty rates (Bennett, 1995; as cited in Makimoto, 1998). It should also be noted that Asians in the United States might not be representative of the population in their country of origin for the simple fact that they have immigrated to the United States as opposed to staying in their home country (Makimoto, 1998).

It is also important to examine the generational differences and different circumstances in which people immigrated to the United States. A large proportion of the Japanese and Chinese population have been in the United States for multiple generations and are likely to be more acculturated than people who are recent immigrants or first generation Americans. It is also important to note the unique circumstances of those who immigrated to the United States from Southeast Asian. Many of those who immigrated to the United States in the 1980s came from refugee camps in Cambodia or Vietnam, and experienced significant psychological and physical violence (D'Avanzo, et. al., 1994).

Research has suggested that the rate of binge drinking increases with a higher level of acculturation (Zane & Kim, 1994). The level of acculturation of any minority youth is an important factor in engaging in risky behaviors, and researchers have demonstrated this with Asian American adolescents as well (Unger et al., 2000; Vega, Alderete, Kolody, & Aguilar-Gaxiola, 1998).

**Peer Group.** Peers also play an important role in drinking behavior. Many adolescents place great importance on being accepted by their peers and will learn to behave according to peer cultures (Harris, 1995). As adolescents grow up, many must choose between the values of their parents’ culture and the values of the dominant society. Hahm and colleagues (2004) proposed one’s peers are more important than acculturation in determining if an Asian-American adolescent will engage in binge
drinking. The researchers found that peer alcohol and tobacco use was a much better predictor of Asian-American adolescent binge drinking than acculturation. They also found that once peer alcohol and tobacco use was controlled, acculturation failed to be a significant predictor of binge drinking. Thus, it appears that peer behaviors are more important than acculturation in predicting Asian-American adolescent binge drinking (Hahm, Lahiff, & Guterman, 2003; Hahm et al., 2004).

Stress. College can be a time of significant stress for the college population considering the large workload, lifestyle adjustment, and competition for grades. Stress can also contribute to many problems that college students experience (e.g. poor academic performance, interpersonal problems, burnout, etc.). Research has suggested that stress may be a motivational factor for drinking among youth and that stress motivated drinking is more prevalent during the undergraduate years than at other times in life (Perkins, 1999).

Multiple studies have indicated that stress plays an important role in alcohol consumption. People reportedly increase their alcohol consumption in response to stress as well as when they anticipate stress (NIAAA, 1996). Also, Field and Powell (2007) reported that alcohol cravings increase when heavy social drinkers are exposed to stressors. Kushner and Sher (1993) reported that college students with either alcohol abuse or dependence were almost two times more likely to report a co-occurring anxiety disorder, further supporting the relationship between anxiety and alcohol use. Moreover, according to questionnaires given to participants from the San Diego Job Corps, youth tend to consume alcohol as a way to relieve stress or avoid negative emotions. Caucasian, Black, and Hispanic participants reported their primary reason for drinking as “to relax,”
while Indochinese youth who recently immigrated to the United States reported using alcohol as a means of “forgetting previous negative experiences” (Morgan, Wingard, & Felice, 1984). Problems experienced by Asian-American youth have traditionally gone overlooked due to the stereotype of Asians being the “model minority” (Chiu & Ring, 1998). This stereotype assumes that Asian-Americans are a homogenous group when in fact, as stated earlier; they are highly diverse facing multiple stressors from a variety of sources. Early studies have reported that Chinese American college students experience more stress than Caucasian counterparts (Sue & Kirk, 1972). Asian-American youth must deal with the stressors that all adolescents deal with as well as the additional challenges of racial discrimination, navigation between multiple cultures, and culturally insensitive educational policies, to name a few (Chiu & Ring, 1998).

**Mindfulness**

The concept of mindfulness is rooted in Buddhist tradition. Mindfulness, specifically mindfulness as used in clinical psychology, is generally defined as a state of being attentive and aware of the present moment (Brown & Ryan, 2003). Mindfulness does not require any affiliation with a religious or spiritual practice (Kabat-Zinn, 1990). Mindfulness can be described as a trait one possesses, somewhat like a personality characteristic. It can also be described as a state of consciousness or a temporary state that one gets himself or herself into. Brown and Ryan (2003) reported that meditative and other mindfulness practices (i.e. activities that increase state mindfulness) also increase trait mindfulness. Thus, high scores on measures of trait mindfulness may be due to a regular mindfulness practices or higher, natural trait mindfulness.
Conversely, there is research that suggests state and trait mindfulness are entirely separate constructs. In their study, Thomson and Waltz (2007) administered various mindfulness questionnaires to 167 undergraduate college students and participated in a 15-min mindfulness meditation. The researchers did not find a correlation between mindfulness during a sitting meditation and everyday mindfulness and suggest that these are separate constructs.

Mindfulness has recently become a common treatment for anxiety and stress. Most notably Mindfulness-Based Stress Reduction (MBSR; Kabat-Zinn, 1990). Higher levels of mindfulness have been associated with lower levels of psychological distress (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006; Coffey & Hartman, 2008), anxiety (Kabat-Zinn, et. al., 1992), substance abuse (Linehan, et. al., 1999), and impulsivity (Brown & Ryan, 2003).

Mindfulness has also been used to treat people trying to stop smoking cigarettes. Bowen and Marlatt (2009) performed a study aimed at raising awareness of cigarette cravings and accompanying habitual reactions. The researchers split 123 undergraduate college student smokers between a mindfulness and control group. Participants in the mindfulness condition received instructions to accept sensations and urges in a nonjudgmental manner. The control group was instructed to deal with their urges and cravings as they normally would. Participants who engaged in the mindfulness condition smoked 1.55 fewer cigarettes at posttest compared to a decrease of .53 cigarettes for participants in the control group. Participants reported no difference in the number or severity of cravings or urges. The researchers suggest that participants in the mindfulness
Mindfulness in binge drinking

condition learn alternative ways of coping with urges and cravings, which results in a decrease in the harmful behavior.

Mindfulness and alcohol use. As stated earlier, stress plays a major role in the drinking habits of college students. It would stand to reason that if one engages in alcohol drinking behavior to reduce stress, than if his or her stress were reduced by other means, he or she would have less desire to drink. Parker, Gilbert, and Thoreson (1978) suggested that relaxation techniques such as meditation would decrease drinking behavior by lowering one’s arousal thereby depriving one from experiencing the tension reducing ability of alcohol and achieving the goal of the drinking behavior. Researchers in this study divided adult male alcoholics into three groups (progressive relaxation training, meditation training, quiet rest control). All groups met for 30 minutes, three times a week for 3 weeks to practice their respective relaxation strategies.

Ostafina and Marlatt (2008) also argue that mindfulness can reduce the likelihood of a problem drinker to drink by getting allowing the drinker to experience urges without acting on them. Using this theory, drinkers can let their urge to drink increase or decrease but will not necessarily feel the need to act on these urges. In their study, 50 college students (all reported using alcohol during the previous month) engaged in an Implicit Association Test (IAT) that assessed alcohol-motivation associations. Participants also completed the Kentucky Inventory of Mindfulness Skills (Baer, Smith, & Allen, 2004) and were assessed for hazardous drinking by often they engaged in binge drinking during the previous month and a 12-item Likert measure.

The researchers hypothesized that the acceptance component of mindfulness would moderate the relationship between automatic alcohol motivation and hazardous
drinking behaviors. A regression analysis supported the authors’ hypothesis and did not support the moderating effects of Observe, Describe, or Act with Awareness. They did not have a hypothesis regarding the role of awareness itself however, their results indicated that awareness marginally served as a moderator between IAT and hazardous drinking. The authors conclude that mindfulness shifts one’s mental content so that people can see their mental content as passing thoughts that may not have truth in them.

Previous research has supported the ability of mindfulness techniques to reduce drinking. Incarcerated participants who engaged in a 10-day Vipassana meditation course had a significant reduction in their substance use and psychiatric symptoms versus those who did not participate in the course (Bowen, Witkiewitz, Dillworth, & Marlatt, 2007; Bowen, Witkiewitz, Dillworth, Chawla, Simpson, Ostafin, et. al., 2006). Participants engaged in 8 hours of sitting meditation per day and were instructed to focus on their breath and body sensations. In addition, Marlatt and colleagues (1984) conducted a study comparing the ability of three relaxation techniques to reduce alcohol consumption among heavy college-age drinkers. While all relaxation techniques were effective, transcendental meditation reportedly produced the most consistent results. Some researchers have also suggested using mindfulness-based interventions to prevent relapse of drug and alcohol use (Witkiewitz, Marlatt, & Walker, 2005). These investigators stated that mindfulness-based interventions could be useful in reducing cravings and urges to use, as well as having added benefits of being cost effective and widely available to the public.

Additionally, Chatzisarantis and Hagger (2007) examined the moderating effects of mindfulness on intention-behavior relationship with the theory of planned behavior. In
this study, the investigators gave participants questionnaires asking about their intended physical behavior and then at a later time they were asked about their actual physical behavior. Participants were also administered the MAAS to assess their level of mindfulness. They reported that people who were more mindful as measured by the MAAS were more likely to follow through with their intended behavior. In addition, they found that habitual binge drinking obstructed the engagement of intended physical activities among people who did not act mindfully. The theory behind this is that people who are mindful pay more attention to the activities in which they engage in, and are better able to control unintended behaviors. Thus it appears as though the benefits of mindfulness as a way to reduce binge drinking are twofold. First, mindfulness may reduce one’s level of stress and thus reduce his or her desire to drink. Second, people who are more mindful are better able to control their behavior and may engage in less binge drinking behavior. It should be noted that the second explanation may only be a predictor of less alcohol consumption among people who do not wish to engage in alcohol use (Chatzisarantis & Hagger, 2007).

It should be noted that not all research demonstrated a reduction in binge drinking with increased mindfulness. Leigh, Bowen, and Marlatt (2005) reported a positive correlation between mindfulness, as measure by the Freiburg Mindfulness Inventory (FMI) and binge drinking. They suggested that increased in mindfulness may make participants more aware of the negative reinforcing effects of alcohol consumption.

Summary. Binge drinking behavior is a problem affecting college students throughout the country and institutions appear to lack time, money, and resources to effectively implement strategies to improve the situation. Furthermore, there does not
appear to be an accurate picture of Asian-American binge drinking. Some studies report less binge drinking activity among Asian-Americans, while others report equal or even more binge drinking. Many of the studies represent only a limited number of the many different cultures the term “Asian” could mean. This is worrisome because the within-group differences are so great among Asian groups. The first goal of this study is to gain a better understanding of these within group differences in binge drinking behavior.

Moreover, previous research has suggested that college binge drinking is greatly influenced by culture and as Asian-American college students become more acculturated to the United States they are more likely to drink alcohol. Furthermore, it is evident that Asian-American college students endure a significant amount of stress that is different from their Caucasian counterparts. As stated earlier drinking is often used to cope with stress for college students. The third goal of this study is to examine the role of trait mindfulness in binge drinking behavior among Asian-American college students.

Previous research has demonstrated that mindfulness may be effective in reducing stress, thus if stress is a major reason for college binge drinking, it stands to reason that those who are naturally more mindful would be less likely to engage in binge drinking behavior.

Statement of Hypotheses

Hypothesis 1: Asian subgroups will report different binge drinking rates and amounts of alcohol consumption such that “new wave” immigrant groups, (Vietnamese, Thai, Hmong, etc.) and multi-racial participants will report higher rates of binge drinking and alcohol consumptions rates than more traditional Asian immigrant groups (Chinese, Japanese, Korean, etc.).
Hypothesis 2: Trait mindfulness will moderate the relationship between alcohol consumption and binge drinking behavior, such that alcohol consumption will be more positively related to binge drinking when mindfulness is low than when mindfulness is high.

Hypothesis 3: Acculturation will moderate the relationship between alcohol consumption and binge drinking behavior, such that alcohol consumption will be more positively related to binge drinking when acculturation is high than when acculturation is low.

METHOD

Measures

Mindful Attention Awareness Scale (MAAS; Brown & Ryan, 2003). The 15-item MAAS is focused on the presence or absence of attention and awareness of what is happening in the moment. This may be slightly different than other measures of mindfulness in that it does not focus on acceptance or empathy. All items are reversed scored on a 6-point likert scale.

These items were selected out of a pool of 184 items and were chosen based on the use of mindfulness “experts,” as well as factor analysis. A confirmatory factor analysis was performed with college students and resulted in an internal consistency of 0.82. Test-retest reliability reportedly showed no significant difference, t(59)=0.11 (Baer, et. al., 2006). Another study involving administration of the MAAS to college students reported a Cronbach alpha of 0.84 (Thomas & Waltz, 2007). MacKillop and Anderson (2007) reported further validation of the MAAS with a large university sample that consisted of 13 Asian participants. The researchers noted however that novice level experience with meditation should not be associated with higher levels of mindfulness
MacKillop and Anderson, 2007). Previous research appears to suggest that the MAAS is a valid and reliable instrument to measure mindfulness as defined by attention and awareness of what is happening in the moment. College students appear to be the population on which many of these validation studies have taken place; however, Asian-American college student representation in these studies has been slim.

**Suinn-Lew Asian Self-Identity Acculturation Scale** (SL-ASIA; Suinn, Rickard Figueroa, Lew, & Vigil, 1987; Suinn, Ahuna, & Khoo, 1992; Suinn, Knoo, & Ahuna, 1995). The SL-ASIA was be used to measure participants’ level of acculturation to the United States based on behaviors, language, identity, friendship choice, generation, and attitudes (Suinn, Rickard-Figueroa, Lew, & Vigil, 1987). The SL-ASIA contains 26 questions measured on a 5-point likert scale (5 being high acculturation). The first 21 items of the SL-ASIA are averaged and each obtains a score ranging from 1 (low acculturation) to 5 (high acculturation). Questions 22 through 26 are additional questions that could be used to gain more information regarding acculturation however, psychometric data was not available for these items. Due to the lack of psychometric data regarding the reliability and validity of these items, they were not included in the analysis of this study.

The SL-ASIA was adapted for people of Asian decent from the Acculturation Rating Scale for Mexican Americans (ARSMA). The SL-ASIA is also worded so that the items are applicable across multiple Asian American groups (e.g. Korean, Chinese, Japanese, and Vietnamese American). Internal consistency studies using Asian American college students have reported a coefficient alpha range of .68 to .91. Out of nine studies using internal consistency to test for reliability the modal alpha range reported was .80.
Among various combined Asian American groups that included Korean Americans, Chinese Americans, and Japanese Americans the alpha ranges reported was .83 to .91 (Ponterotto, Baluch, & Carielli, 1998).

*Alcohol Use Disorders Identification Test.* The 10-item Alcohol Use Disorders Identification Test (AUDIT; Babor, Higgins-Biddle, Saunders, & Monteiro, 2001) is commonly used to screen for alcohol use disorder in health care settings and has been shown to be useful in obtaining information regarding the quantity and frequency of alcohol use (Reinert & Allen, 2002; Saunders, Aasland, Babor, & Fuente, 1993). One of the AUDIT’s major strengths is its ability to identify alcohol-related problems in people who may not necessarily meet criteria for alcohol dependence. The AUDIT is particularly useful for screening women and minorities (Babor, et. al., 2001; Reinert & Allen, 2002). The AUDIT has also shown promise when testing adolescents and college students (Babor, et. al., 2001; Kokotailo et al., 2004). AUDIT questions numbers 2 and 3 were used to measure the amount of alcohol consumed per average drinking episode and frequency of binge drinking episodes.

*Participants*

Participants for this study were 85 undergraduate college students who identified themselves as Asian-American. All participants were men and women 18 years of age or older, recruited from various 4-year colleges and universities around the country. Liberal arts, residential schools (i.e. school where students tend to live on or near campus) were chosen and the primary sources of participants but other 4-year institutions were included in order to gather an appropriate number of participants. Residential schools were focused on primarily because it was reasoned that residential schools would be more
likely to exhibit more of the “college culture” than schools where students lived off
campus and had to commute to campus. Schools that were specifically recruited from
were Pacific University, Reed College, Lewis and Clark College, and St. Olaf College,
however the majority of participants did not come from these schools.

Procedure

Professors at these schools were sent recruitment emails (Appendix D) asking
permission to contact their students and supply them with a link to the questionnaires. If
the professor approved, he or she was asked to forward the email to his or her students.
In addition flyers will be posted on college campuses where permission is obtained.
Electronic flyers were posted on the popular socializing website Facebook and were
made available to these specific college networks to ensure that only college students will
be completing the measures. Students were also be recruited through IRB Approved
Study Share at http://irbapproved.blogspot.com/, an online blog designed to inform
participants about irb approved studies. Emails and flyers contained an internet link to
the demographic information sheet, AUDIT, MAAS, SL-ASIA, and informed consent

Internet based measures appear to be appropriate for the sensitive nature of the
questions being asked. Previous research has suggested that computer-based
questionnaires are as valid or more valid than in-person interviews or pen-and-paper self-
report (Stacy, Widaman, Hays, & DiMatteo, 1985; Skinner & Allen, 1983; Midanik,
1988). One study reported that participants reported 33% more alcohol use on a
computer-based questionnaire than during an in-person interview (Duffy & Waterton,
1984). This is particularly important given the validity of self-reports of previous alcohol
and drug studies and the sensitive nature of the information being gathered (Midanik,
Upon completion of the online questionnaires, informed consent, and demographic sheet, participants were entered into a drawing for a $50 gift certificate where one participant was selected at random to receive said gift certificate.

Once data collection was complete, information was exported from www.psychdata.com directly to an SPSS spreadsheet. Information regarding binge drinking behavior was separated by participants’ specific cultural affiliation (Chinese, Cambodian, Korean, Thai, etc.) in order identify differences in binge drinking behavior within the Asian-American culture. These statistics will include average drinking amounts and binge drinking frequency. Additionally, participants were divided into “new wave” and traditional immigrant groups. Those reporting Japanese, Chinese, Korean, or Taiwanese ethnicity were placed in the “traditional” group while those reporting Cambodian, Filipino, Thai, Vietnamese, multi-ethnic, Hmong, or Indian were placed in the “new wave” group. Participants who reported simply “Asian-American” for their ethnicity were not placed in either category.

Design

Two analyses of variance (ANOVAs) and an independent samples t-test were used to assess subgroup mean differences in alcohol consumption and binge drinking (Hypothesis 1). To test Hypotheses 2-3, a hierarchical linear regression analysis was performed, with the continuous variables alcohol consumption entered at step 1. Acculturation, and mindfulness were entered at step 2. Finally, the interaction between alcohol consumption and mindfulness (Hypothesis 2) and alcohol consumption and acculturation (Hypothesis 3) entered at step 3.
RESULTS

Data cleaning

Prior to data analysis, all variables were examined using SPSS 15.0 (SPSS Inc, 2007) to determine the data’s compliance with univariate and multivariate assumptions. Cases with more than 15% missing data were excluded from the analysis (Tabachnik and Fidell, 2001). Four cases were deleted due to missing data. Fifteen additional cases were excluded due to not meeting the requirements of the study (e.g. not being of Asian decent, under 18 years old, etc.).

Distribution characteristics and descriptive statistics

Means, standard deviations, and skewness and kurtosis values and their standard errors for all variables are provided in Table 1. The mean from the MAAS is comparable to the reported norm, however the standard deviation is larger in the current sample than in previously reported norms. Current mean and standard deviation for the MAAS ($M = 3.78$, $SD = 1.30$) compared to the sample of values reported in the normative sample ($M = 3.97$, $SD = 0.64$; Brown & Ryan, 2003). The mean and standard deviation for the SL-ASIA was ($M = 2.31$, $SD = 0.54$), with a score of 1 being low acculturation and 5 being high acculturation.

Cronbach’s alpha for the SL-ASIA was .91. This is comparable to the .63 to .91 range found in previous studies with Japanese, Korean, and Chinese populations (Ponterotto, Baluch, & Carielli, 1998). For the MAAS, the Cronbach alpha was .96. This is higher than the previously reported range of .80 to .87 (Baer, et. al., 2006; Thomas & Waltz, 2007; Brown & Ryan, 2003). These results imply that the measures used in this study tend to measure the same construct for the participants involved.
Table 1

*Means, Standard Deviations, Skewness, and Kurtosis by Variable*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>Skewness (SE)</th>
<th>Kurtosis (SE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAAS</td>
<td>3.78</td>
<td>1.30</td>
<td>.09 (.26)</td>
<td>-1.11 (.52)</td>
</tr>
<tr>
<td>SL-ASIA</td>
<td>2.31</td>
<td>.54</td>
<td>.40 (.27)</td>
<td>.05 (.51)</td>
</tr>
<tr>
<td>Drink</td>
<td>2.94</td>
<td>1.30</td>
<td>.18 (.26)</td>
<td>-1.07 (.52)</td>
</tr>
<tr>
<td>Binge Drink</td>
<td>2.19</td>
<td>1.17</td>
<td>.58 (.26)</td>
<td>-.82 (.52)</td>
</tr>
</tbody>
</table>

*Note.* MAAS = Mindful Attention Awareness Scale, SL-ASIA = Suinn-Lew Asian Self Identity Acculturation Scale, Drink=How often do you have a drink containing alcohol, Binge Drink=How often do you have six or more alcoholic drinks on one occasion

*Analysis of Variance*

Two one-way Analyses of Variance (ANOVAs) and an independent samples t-test were conducted to explore Hypothesis 1. The purpose of running the One-way ANOVAs was to determine if differences in alcohol consumption and binge drinking behavior existed between Asian subgroup populations. While the independent samples t-test was to more explore the difference between “new wave” and more traditional immigrant groups in binge drinking frequency. The analysis for subgroup differences in alcohol consumption was not significant $F(9,75)= .66, p=.74$. Subgroup differences for binge drinking however, were significant $F(9,75)=2.11, p=.04$. Hmong students reported the greatest frequency of binge drinking ($M=3.5, SD=.71$) and Taiwanese, Japanese, and Vietnamese all reported the lowest frequency of binge drinking ($M=1.0 SD=0.0$). The remaining subgroup information can be found in Figure 1. No significant differences
were found in binge drinking behavior between “new wave” (M=2.09, SD=1.22) and more traditional (M=2.19, SD=1.13) immigrant groups t(74)=.38, p=.72.

Table 2

ANOVA for alcohol consumption

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of square</th>
<th>df</th>
<th>Mean square</th>
<th>F</th>
<th>sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between</td>
<td>10.44</td>
<td>9</td>
<td>1.16</td>
<td>.66</td>
<td>.74</td>
</tr>
<tr>
<td>Within</td>
<td>132.27</td>
<td>75</td>
<td>1.76</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>142.71</td>
<td>84</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 3

ANOVA for binge drinking

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of square</th>
<th>df</th>
<th>Mean square</th>
<th>F</th>
<th>sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between</td>
<td>23.24</td>
<td>9</td>
<td>2.58</td>
<td>2.11</td>
<td>.04</td>
</tr>
<tr>
<td>Within</td>
<td>91.75</td>
<td>75</td>
<td>1.22</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>114.99</td>
<td>84</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Hierarchical linear regression analysis

The regression analysis was conducted using SPSS 15 (SPSS Inc, 2007). As is recommended for moderation tests, all variables were centered prior to analysis (Whisman & McClelland, 2005). To examine whether trait mindfulness and acculturation moderate the association between alcohol use and binge drinking; alcohol use, MAAS, SL-ASIA, and the alcohol use X MAAS and alcohol use X SL-ASIA interactions were entered into a multiple regression model to predict binge drinking behavior.
As shown in Table 3, trait mindfulness was a statistically significant negative predictor of binge drinking ($\beta = -.30, p = .003$). However, acculturation was not a statistically significant predictor of binge drinking ($\beta = -.10, p = .32$). These results indicate that as mindfulness increases, binge drinking behavior decreases and that acculturation is not a significantly related to binge drinking behavior.

The results failed to find support for hypotheses 2 and 3. More specifically, the interaction between mindfulness and alcohol use (hypothesis 2) was not significant ($\beta = .12, p = .60$), nor was the interaction between acculturation and alcohol use (hypothesis 3: $\beta = .24, p = .33$). The main effects model in step 1 (alcohol use) accounted for a statistically significant amount of the variance in the prediction of binge drinking behavior ($R^2 = .35, F = 41.50, p < .001$). Adding the mindfulness and acculturation terms in step 2 contributed unique variance to the model ($\Delta R^2 = .12, \Delta F = 7.90, p = .001$). Adding the interaction terms in step 3 did not contribute unique variance to the model ($\Delta R^2 = .02, \Delta F = 1.09, p = .343$).
Table 4

*Hierarchical Regression Analysis Predicting Binge Drinking Behavior from Mindfulness, Acculturation, and Their Interaction with Alcohol Use*

<table>
<thead>
<tr>
<th>Step</th>
<th>Predictor</th>
<th>β</th>
<th>ΔR²</th>
<th>FΔ</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>Alcohol use</td>
<td>0.60**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 2</td>
<td>Mindfulness</td>
<td>0.12</td>
<td>0.48</td>
<td>7.90</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>Acculturation</td>
<td>-0.30*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 3</td>
<td>Alcohol use x Mindfulness</td>
<td>0.02</td>
<td>0.04</td>
<td>1.09</td>
<td>0.343</td>
</tr>
<tr>
<td></td>
<td>Alcohol use x Acculturation</td>
<td>0.24</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note. *p < .05, **p < .001*

**DISCUSSION**

The purpose of this study was to determine the impact of Asian undergraduate students’ trait mindfulness and acculturation on their binge drinking behavior. Another goal was to explore the differences in alcohol consumption between different Asian subgroups. Binge drinking has long been a problem for college campuses, leading to increases in physical violence, legal problems, and damage to college institutions. Asian-American students have historically been seen as a group that is not greatly affected by binge drinking despite some evidence to the contrary. This study aimed to explore the impact trait mindfulness and acculturation have on binge drinking behavior, as well as, identify differences in binge drinking rates between Asian-American subcultures.
Consistent with Hypothesis 1, significant differences in binge drinking behavior was found between different Asian subgroups however; the differences were not exactly as hypothesized. There was not a significant difference in binge drinking between “new wave” and more traditional immigrant groups. Hmong, Chinese, and Indian participants reported the most binge drinking while Japanese, Taiwanese, and Vietnamese reported the lowest amounts of binge drinking behavior. Participants who reported Hmong descent reported an average score of 3.5, which represents a consumption of six or more alcoholic drinks at least once per week. Whereas, Japanese, Vietnamese, and Taiwanese participants all reported consuming six or more drinks less than once per month. Also, inconsistent with Hypothesis 1, there was no significant difference among Asian subgroups in terms of alcohol consumption, meaning no difference in the frequency participants consumed alcoholic beverages.

Consistent with Hypothesis 2, trait mindfulness was a significant negative predictor of binge drinking behavior such that as mindfulness decreased, binge-drinking behavior increased. The interaction between mindfulness and alcohol use however, was not significant. Thus, it can be implied that Asian college students who have greater awareness engage in binge drinking less often, but contrary to Hypothesis 2, it cannot be implied that a greater awareness causes less binge drinking behavior. It should also be noted that the measure of mindfulness in this study (MAAS), is more of a measure of “mindlessness” than “mindfulness,” asking participants questions about when they are not being mindful. Therefore, the result can more accurately be interpreted as; students who are less aware engage in binge drinking more often. Regardless, interpretation of the data suggests that, within Asian-American populations, college students who exhibit
more awareness in their daily activities will drink alcohol but avoid binge drinking. An explanation for this could be that students who are not aware of their behaviors are simply not keeping track of their drinking behavior and let it slip into a binge without knowledge. Another explanation could be that students who engage in binge drinking behavior do not place value on their behaviors, similar to the “fuck-its,” a common phenomenon seen in people with alcoholism.

Inconsistent with Hypothesis 3, acculturation was not a significant predictor of binge drinking behavior. It was hypothesized that as students became more acculturated to American culture they would more likely to engage in binge drinking behavior because of the culture of drinking that has been adopted by many college campuses. The lack of impact of acculturation on binge drinking behavior might be due to some Asian cultures also adopting a more accepting view of drinking. As a result, acculturation would not play a factor in binge drinking because both cultures impacting the student would have a more accepting attitude towards binge drinking.

**Limitations**

There are multiple limitations to this study that need to be considered when interpreting the results. First, there was an error when transferring the AUDIT from paper to the online measure. The AUDIT asks how often people have more than six drinks in a sitting. It was intended to change this question to better reflect the current definition of binge drinking, which is five drinks for men and 4 drinks per sitting for women. It is likely that there was an underreporting of binge drinking behavior due to this error because participants were only asked how often they consumed six or more drinks, excluding the times they may have had four or five.
Second, recruitment method was too inclusive. The method of recruitment, using online flyers and other general posting opened the study up for people to participate in the study who did not meet the inclusion criteria. As stated earlier, 15 participants had to be excluded from analysis due to not meeting ethnic (i.e. self-identifying as black, white, nothing) or institution (i.e. not being a college student) criteria. More direct, in person recruitment at specific schools could fix this. It is also possible that recruitment from student organizations (e.g. Asian student associations) versus classrooms could improve this, however, researchers would have to be careful not to exclude students who identify as Asian but do not participate in such student organizations.

**Conclusion**

Binge drinking is an issue that affects all college students. It is a destructive behavior that is physically, legally, and financially dangerous for the students involved and the broader community. Current strategies to limit binge drinking are ineffective and do not appear to reduce any of the risk that is inherent in binge drinking. The aim of this study was to gain further insight into this college phenomenon, specifically within the Asian-American population, which has generally been seen as a group that does not engage in binge drinking behavior despite evidence to the contrary. It was found that there are significant differences between Asian subgroups in the frequency of binge drinking behavior. There did not appear to be any common themes between the subgroups that binge drink more and those that binge drink less, suggesting that each Asian subgroup is unique when it comes to their binge drinking patterns. Furthermore, the degree of acculturation does not appear to be a significant predictor in binge drinking behavior among Asian American college students. In other words, the degree to which
students identify with Asian or United States culture does not appear to impact binge drinking behavior. Mindfulness however, does appear to be a significant predictor of binge drinking behavior. The less aware and present students are the more binge drinking they report.

Future research should further explore the interaction between mindfulness and alcohol use among Asian American college students to further clarify this relationship. This could possibly be done through using different measures of mindfulness (e.g. Kentucky Inventory of Mindfulness, Freiburg Mindfulness Inventory, etc.). These measures would be beneficial in that they measure additional concepts of mindfulness beyond attention and awareness. It would also be interesting to explore if raising awareness in this population will result in lower binge drinking rates. If so, it may benefit colleges to implement mindfulness programs as an indirect way to limit binge drinking behavior. This study was a preliminary step to gaining better insight into the factors that impact binge drinking behavior among Asian American college students, which will hopefully lead to future research and programs to better maintain the health and safety of youth.
References


Mindfulness in binge drinking


Mindfulness in binge drinking


Mindfulness in binge drinking


Appendix A: Alcohol Use Disorder Scale

**Alcohol Use Disorders Questionnaire (AUDIT)**

<table>
<thead>
<tr>
<th>AUDIT QUESTIONNAIRE.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Please CIRCLE your answer to each of the 10 questions.</td>
</tr>
</tbody>
</table>

**1 How often do you have a drink containing alcohol?**

<table>
<thead>
<tr>
<th>(0) Never</th>
<th>(1) Monthly or less</th>
<th>(2) Two to four times a month</th>
<th>(3) Two or three times a week</th>
<th>(4) Four or more times a week</th>
</tr>
</thead>
</table>

**2 How many drinks containing alcohol do you have on a typical day when you are drinking?**

<table>
<thead>
<tr>
<th>(0) 1 or 2</th>
<th>(1) 3 or 4</th>
<th>(2) 5 or 6</th>
<th>(3) 7 to 9</th>
<th>(4) 10 or more</th>
</tr>
</thead>
</table>

**3 How often do you have six or more drinks on one occasion?**

<table>
<thead>
<tr>
<th>(0) Never</th>
<th>(1) Less than monthly</th>
<th>(2) Monthly</th>
<th>(3) Weekly</th>
<th>(4) Daily or almost daily</th>
</tr>
</thead>
</table>

**4 How often during the past year have you found that you were not able to stop drinking once you had started?**

<table>
<thead>
<tr>
<th>(0) Never</th>
<th>(1) Less than monthly</th>
<th>(2) Monthly</th>
<th>(3) Weekly</th>
<th>(4) Daily or almost daily</th>
</tr>
</thead>
</table>

**5 How often during the past year have you failed to do what was normally expected of you because of drinking?**

<table>
<thead>
<tr>
<th>(0) Never</th>
<th>(1) Less than monthly</th>
<th>(2) Monthly</th>
<th>(3) Weekly</th>
<th>(4) Daily or almost daily</th>
</tr>
</thead>
</table>

**6 How often during the past year have you needed a first drink in the morning to get yourself going after a heavy drinking session?**

<table>
<thead>
<tr>
<th>(0) Never</th>
<th>(1) Less than monthly</th>
<th>(2) Monthly</th>
<th>(3) Weekly</th>
<th>(4) Daily or almost daily</th>
</tr>
</thead>
</table>
7. How often during the past year have you had a feeling of guilt or remorse after drinking?

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Less than monthly</th>
<th>Monthly</th>
<th>Weekly</th>
<th>Daily or almost daily</th>
</tr>
</thead>
</table>

8. How often during the past year have you been unable to remember what happened the night before because you had been drinking?

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Less than monthly</th>
<th>Monthly</th>
<th>Weekly</th>
<th>Daily or almost daily</th>
</tr>
</thead>
</table>

9. Have you or has someone else been injured as a result of your drinking?

<table>
<thead>
<tr>
<th></th>
<th>No</th>
<th>Yes, but not in the past year</th>
<th>Yes, during the past year</th>
</tr>
</thead>
</table>

10. Has a relative or friend or a doctor or other health worker been concerned about your drinking or suggested you cut down?

<table>
<thead>
<tr>
<th></th>
<th>No</th>
<th>Yes, but not in the past year</th>
<th>Yes, during the past year</th>
</tr>
</thead>
</table>
Appendix B: Mindfulness Attention Awareness Scale

**Day-to-Day Experiences**

Instructions: Below is a collection of statements about your everyday experience. Using the 1-6 scale below, please indicate how frequently or infrequently you currently have each experience. Please answer according to what really reflects your experience rather than what you think your experience should be. Please treat each item separately from every other item.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Almost Always</td>
<td>Very Frequently</td>
<td>Somewhat Frequently</td>
<td>Somewhat Infrequently</td>
<td>Very Infrequently</td>
<td>Almost Never</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Statement</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>I could be experiencing some emotion and not be conscious of it until some time later.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>I break or spill things because of carelessness, not paying attention, or thinking of something else.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>I find it difficult to stay focused on what’s happening in the present.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>I tend to walk quickly to get where I’m going without paying attention to what I experience along the way.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>I tend not to notice feelings of physical tension or discomfort until they really grab my attention.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>I forget a person’s name almost as soon as I’ve been told it for the first time.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>It seems I am “running on automatic,” without much awareness of what I’m doing.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>I rush through activities without being really attentive to them.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>I get so focused on the goal I want to achieve that I lose touch with what I’m doing right now to get there.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>I do jobs or tasks automatically, without being aware of what I'm doing.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>I find myself listening to someone with one ear, doing something else at the same time.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>I drive places on ‘automatic pilot’ and then wonder why I went there.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>I find myself preoccupied with the future or the past.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
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<td>-----------------------------------------------------------------</td>
<td>---</td>
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<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>I find myself doing things without paying attention.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I snack without being aware that I’m eating.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix C: Suinn-Lew Asian Self-Identity Acculturation Scale (SL-ASIA)

**SUINN-LEW ASIAN SELF-IDENTITY ACCULTURATION SCALE**

**(SL-ASIA)**

**INSTRUCTIONS:** The questions which follow are for the purpose of collecting information about your historical background as well as more recent behaviors which may be related to your cultural identity. Choose the one answer which best describes you.

1. What language can you speak?
   1. Asian only (for example, Chinese, Japanese, Korean, Vietnamese, etc.)
   2. Mostly Asian, some English
   3. Asian and English about equally well (bilingual)
   4. Mostly English, some Asian
   5. Only English

2. What language do you prefer?
   1. Asian only (for example, Chinese, Japanese, Korean, Vietnamese, etc.)
   2. Mostly Asian, some English
   3. Asian and English about equally well (bilingual)
   4. Mostly English, some Asian
   5. Only English

3. How do you identify yourself?
1. Oriental

2. Asian

3. Asian-American


5. American

4. Which identification does (did) your mother use?

1. Oriental

2. Asian

3. Asian-American


5. American

5. Which identification does (did) your father use?

1. Oriental

2. Asian

3. Asian-American


5. American

6. What was the ethnic origin of the friends and peers you had, as a child up to age 6?
1. Almost exclusively Asians, Asian-Americans, Orientals

2. Mostly Asians, Asian-Americans, Orientals

3. About equally Asian groups and Anglo groups

4. Mostly Anglos, Blacks, Hispanics, or other non-Asian ethnic groups

5. Almost exclusively Anglos, Blacks, Hispanics, or other non-Asian ethnic groups

7. What was the ethnic origin of the friends and peers you had, as a child from 6 to 18?

1. Almost exclusively Asians, Asian-Americans, Orientals

2. Mostly Asians, Asian-Americans, Orientals

3. About equally Asian groups and Anglo groups

4. Mostly Anglos, Blacks, Hispanics, or other non-Asian ethnic groups

5. Almost exclusively Anglos, Blacks, Hispanics, or other non-Asian ethnic groups

8. Whom do you now associate with in the community?

1. Almost exclusively Asians, Asian-Americans, Orientals

2. Mostly Asians, Asian-Americans, Orientals

3. About equally Asian groups and Anglo groups

4. Mostly Anglos, Blacks, Hispanics, or other non-Asian ethnic groups

5. Almost exclusively Anglos, Blacks, Hispanics, or other non-Asian ethnic groups

9. If you could pick, whom would you prefer to associate with in the community?
1. Almost exclusively Asians, Asian-Americans, Orientals

2. Mostly Asians, Asian-Americans, Orientals

3. About equally Asian groups and Anglo groups

4. Mostly Anglos, Blacks, Hispanics, or other non-Asian ethnic groups

5. Almost exclusively Anglos, Blacks, Hispanics, or other non-Asian ethnic groups

10. What is your music preference?

1. Only Asian music (for example, Chinese, Japanese, Korean, Vietnamese, etc.)

2. Mostly Asian

3. Equally Asian and English

4. Mostly English

5. English only

11. What is your movie preference?

1. Asian-language movies only

2. Asian-language movies mostly

3. Equally Asian/English English-language movies

4. Mostly English-language movies only

5. English-language movies only
12. What generation are you? (circle the generation that best applies to you:)

1. 1st Generation = I was born in Asia or country other than U.S.

2. 2nd Generation = I was born in U.S., either parent was born in Asia or country other than U.S.

3. 3rd Generation = I was born in U.S., both parents were born in U.S, and all grandparents born in Asia or country other than U.S.

4. 4th Generation = I was born in U.S., both parents were born in U.S, and at least one grandparent born in Asia or country other than U.S. and one grandparent born in U.S.

5. 5th Generation = I was born in U.S., both parents were born in U.S., and all grandparents also born in U.S.

6. Don't know what generation best fits since I lack some information.

13. Where were you raised?

   1. In Asia only
   2. Mostly in Asia, some in U.S.
   3. Equally in Asia and U.S.
   4. Mostly in U.S., some in Asia
   5. In U.S. only

14. What contact have you had with Asia?

   1. Raised one year or more in Asia
   2. Lived for less than one year in Asia
3. Occasional visits to Asia

4. Occasional communications (letters, phone calls, etc.) with people in Asia

5. No exposure or communications with people in Asia

15. What is your food preference at home?

   1. Exclusively Asian food
   
   2. Mostly Asian food, some American
   
   3. About equally Asian and American
   
   4. Mostly American food
   
   5. Exclusively American food

16. What is your food preference in restaurants?

   1. Exclusively Asian food
   
   2. Mostly Asian food, some American
   
   3. About equally Asian and American
   
   4. Mostly American food
   
   5. Exclusively American food

17. Do you

   1. read only an Asian language
   
   2. read an Asian language better than English
3. read both Asian and English equally well

4. read English better than an Asian language

5. read only English

18. Do you

1. write only an Asian language

2. write an Asian language better than English

3. write both Asian and English equally well

4. write English better than an Asian language

5. write only English

19. If you consider yourself a member of the Asian group (Oriental, Asian, Asian-American, Chinese-American, etc., whatever term you prefer), how much pride do you have in this group?

1. Extremely proud

2. Moderately proud

3. Little pride

4. No pride but do not feel negative toward group

5. No pride but do feel negative toward group

20. How would you rate yourself?

1. Very Asian
2. Mostly Asian

3. Bicultural

4. Mostly Westernized

5. Very Westernized

21. Do you participate in Asian occasions, holidays, traditions, etc.?

1. Nearly all

2. Most of them

3. Some of them

4. A few of them

5. None at all

22. Rate yourself on how much you believe in Asian values (e.g., about marriage, families, education, work):

1   2   3   4   5

(do not believe) (strongly believe in Asian values)

23. Rate your self on how much you believe in American (Western) values:

1   2   3   4   5

(do not believe) (strongly believe in American values)

24. Rate yourself on how well you fit when with other Asians of the same ethnicity:
25. Rate yourself on how well you fit when with other Americans who are non-Asian (Westerners):

1 2 3 4 5

(do not fit) (fit very well)

26. There are many different ways in which people think of themselves. Which ONE of the following most closely describes how you view yourself?

1. I consider myself basically an Asian person (e.g., Chinese, Japanese, Korean, Vietnamese, etc.). Even though I live and work in America, I still view myself basically as an Asian person.

2. I consider myself basically as an American. Even though I have an Asian background and characteristics, I still view myself basically as an American.

3. I consider myself as an Asian-American, although deep down I always know I am an Asian.

4. I consider myself as an Asian-American, although deep down, I view myself as an American first.

5. I consider myself as an Asian-American. I have both Asian and American characteristics, and I view myself as a blend of both.
Appendix D: Demographic Form

Demographic Information

1.) Age: ____

2.) Gender:      Male      Female

3.) School you attend:________________________

4.) Year in College: _______

5.) Ethnicity (Please list specific country/countries of origin you identify with):

________________________________________________________________________

________________________________________________________________________

6.) Country of Residence: _______________________

6.) If answered United States above, which state do you claim permanent residence?

________________________
Appendix E: Sample recruitment letter

Dear XXXX,

I am a Pacific University, School of Professional Psychology student currently working on my doctoral dissertation under the supervision of Dr. Cathy Moonshine, Ph.D, MAC, CADC III. I am conducting research about alcohol use and mindfulness. More specifically, I am researching the relationship between trait mindfulness and binge drinking behavior. My research has not yet been approved by IRB but I was hoping that once it has I could recruit participants from your classes. Participants must be students over 18 years old who identify themselves as from Asian descent. Participation by your students would entail completing two questionnaires and a demographic from, all of which will be available online. Please let me know if this would be acceptable to you.

If you have any questions or comments, please contact me at (763) 607-4446, char3933@pacificu.edu or my dissertation chair, Dr. Cathy Moonshine at (503) 750-2571, cathymoonshine@drmoonshine.com. Thank-you for your time and I look forward to your response.

Sincerely,

Dean Charles, M.S.
Appendix F: Standard Drink Chart

**What Is a Standard Drink?**

A standard drink is any drink that contains about 14 grams of pure alcohol (about 0.6 fluid ounces or 1.2 tablespoons). Below are standard drink equivalents as well as the number of standard drinks in different container sizes for each beverage. These are approximate, as different brands and types of beverages vary in their actual alcohol content.

<table>
<thead>
<tr>
<th>STANDARD DRINK EQUIVALENTS</th>
<th>APPROXIMATE NUMBER OF STANDARD DRINKS IN:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BEER or COOLER</strong></td>
<td></td>
</tr>
<tr>
<td>~5% alcohol</td>
<td></td>
</tr>
<tr>
<td>12 oz.</td>
<td>12 oz. = 1</td>
</tr>
<tr>
<td></td>
<td>16 oz. = 1.3</td>
</tr>
<tr>
<td></td>
<td>22 oz. = 2</td>
</tr>
<tr>
<td></td>
<td>40 oz. = 3.3</td>
</tr>
<tr>
<td>~7% alcohol</td>
<td></td>
</tr>
<tr>
<td>8-9 oz.</td>
<td>12 oz. = 1.5</td>
</tr>
<tr>
<td></td>
<td>16 oz. = 2</td>
</tr>
<tr>
<td></td>
<td>22 oz. = 2.5</td>
</tr>
<tr>
<td></td>
<td>40 oz. = 4.5</td>
</tr>
<tr>
<td><strong>TABLE WINE</strong></td>
<td></td>
</tr>
<tr>
<td>5 oz.</td>
<td>a 750 mL (25 oz.) bottle = 5</td>
</tr>
</tbody>
</table>
### Mindfulness in binge drinking

#### 80-proof SPIRITS (hard liquor)

<table>
<thead>
<tr>
<th>~12% alcohol</th>
<th>~40% alcohol</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5 oz.</td>
<td>*Note: Depending on factors such as the type of spirits and the recipe, one mixed drink can contain from one to three or more standard drinks.</td>
</tr>
</tbody>
</table>

- a mixed drink = 1 or more*
- a pint (16 oz.) = 11
- a fifth (25 oz.) = 17
- 1.75 L (59 oz.) = 39