

A Comparison of Alcohol Secondhand Effects among Korean and U.S. College Students

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I. Introduction

It has been widely known that harmful use of alcohol is prevalent among youth and is a key public health issue requiring urgent attention (Courtney and Pollach, 2009). Among collegiate Koreans, two out of five students usually drink seven or more alcoholic beverages when they drink, and 15% of students were found to be alcohol dependent (Chun *et al.*, 2001).

Many Koreans believe that drinking alcohol is essential for creating a pleasant atmosphere at gatherings, and nondrinkers are disadvantaged in their work and social experiences (Choi *et al.*, 2001, Park *et al.*, 2004). Drinking at gatherings is visible and often practiced among college students. Freshmen college students are pressured to join in drinking parties and consume more alcohol (Lee, 1998-99). In this country, cultural and societal norms play a major part in alcohol consumption and

should not be viewed as an individual problem (Han, 1998).

Excessive or binge drinking among college students is associated with a number of adverse health effects including hangovers, poor academic performance, legal trouble (Wechsler *et al.*, 1998; Wechsler & Isaac, 1992), poor athletic performance (Leichliter *et al.*, 1998). Social and relational problems (Nezlek *et al.*, 1994), unsafe and unplanned sex (Meilman, 1993), are also common.

A study conducted in the U.S. regarding morbidity and mortality changes among 18- to 24-year-old college students from 1998 to 2001, found that binge drinking and driving while intoxicated (DWI), increased since 1998. The number of students who reported DWI increased from 2.3 million to 2.9 million (Hingson *et al.*, 2005). In 2001, there was a 6% increase in unintentional injury deaths, an estimated 1,700 deaths among college students since 1998. (Hingson *et al.*, 2005). Reports show that there were more

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than 696,000 assaults committed by students who had been drinking, and more than 97,000 students who were victims of alcohol-related sexual assaults or date rapes (Hingson *et al.*, 2005). Moreover, Wechsler and others (1995) reported that students who did not drink excessively were affected by secondhand problems from heavy drinkers including vandalism, interrupted sleep, having to take care of other students who were drunk, and experiencing unwanted sexual advances (Wechsler *et al.*, 1995). Alcohol-related problems on campus do exist and drinkers alone do not suffer the consequences, it extends even to those who drink rarely or not at all. The aim of this study is to compare Korean and U.S. college students alcohol secondhand effects.

II. Methods

1. U.S. College Alcohol Study

The college and students sample

The 2001 Harvard School of Public Health College Alcohol Study (CAS) surveyed students at 120 colleges that had participated in each of the previous three surveys - 1993, 1997, and 1999. The participating schools were located in 38 states and the District of Columbia. From a list of accredited 4-year colleges provided by the American Council on Education, an original sample of 140 colleges was selected in 1993 using probability sampling proportionate to the size of undergraduate enrollment at each institution. Twenty schools were excluded due to the institutions' inability to provide a sample of students and mailing address to meet the time constraints of the survey.

Administrators at each participating school used the same procedure as that in conducting previous

CAS surveys to provide a list of 215 randomly selected students from all full-time undergraduate students enrolled during the 2000-2001 school year. Details of the previous sampling methods are described elsewhere (Wechsler *et al.*, 1994, 1998, 2000, 2002). In conducting the data analyses, we excluded 1 college with a response rate that was substantially lower than the others, leaving 119 schools. The sample of 119 colleges represented a national cross-section of students enrolled at 4-year colleges. Sixty-nine percent of the respondents attended public colleges and 31% private colleges, which approximates the US national distribution of full-time 4-year college students of 68% and 32%, respectively (Enrollment in postsecondary institutions, 1997). Forty-seven percent of the respondents attended large colleges (> 10,000 students), 23% were at medium-sized colleges (5,000-10,000 students), and 29% were enrolled in small colleges (< 5,000 students), compared to the US national distribution of 37%, 24%, and 40%, respectively (Enrollment in postsecondary institutions, 1997). Sixty-nine percent of respondents attended schools in large or medium-sized cities, compared with 71% of students nationwide (Enrollment in postsecondary institutions, 1997). Thirteen percent of the students attended schools with a religious affiliation, compared with 16% nationwide (Enrollment in postsecondary institutions, 1997), and 5% of the students attended all women's colleges Wechsler *et al.*, 2002).

Procedures and response rate

In each survey year, CAS conducted a mail survey of students whose names were generated at random by registrars at participating schools. A

cover letter sent to students instructed them on their rights as human subjects. The survey responses were anonymous and confidential, and on this basis the study was given exempt status by the HSPH Human Subject Committee. The mailings were timed to avoid spring break at each school in order to measure drinking behavior on campus rather than during vacation.

The college response rate was 52% in 2001 (range: 22% to 86%). However, response rates at individual colleges were not associated with binge rates at those schools. The Pearson correlation coefficient of the associations between a colleges' binge rate and its response rate was 0.170 ($p = .064$) in 2001. In conducting the data analyses, 10,924 cases were used.

2. Korean College Alcohol study

The college and students sample

National Korean samples were selected from the list of accredited 4-year colleges from the Korean Council on University Education using probability proportionate to size of enrollment, college types, and districts. Sixty colleges were selected randomly. The sampling rates were 29% among colleges and 0.22% of the students. The sampling rates were 0.21% among women college students, 0.26% among religiously-affiliated college students and 0.22% among education college and general college students. All samples were randomly selected from the each provinces.

Ten of the 60 universities had enrollments of 10,000 or more students, 22 between 5,000 and 10,000 and 28 less than 5,000 students. Two of 60 universities were women's colleges, four were religiously-affiliated colleges, and four were education colleges.

Procedures and response rate

We selected department, current year of matriculation in participating colleges and assigned the number of students to the survey proportionally. We sent the proportionally assigned questionnaires to the registrars or faculty (Range: 20 cases to 100 cases). For comparison purposes, the Harvard CAS questionnaire was used to prepare the KCAS questionnaires. During the translation, some questions were modified to convey a more clear meaning. A cover letter was sent to students instructing them on their rights as human subjects. The survey responses were anonymous and confidential.

The mailings were timed to avoid summer vacation at each school in order to measure drinking behavior on campus rather than off campus during vacation. We mailed 2,931 questionnaires on May 12th 2003, and 2,399 questionnaire responses arrived by the cut off date of June 13th 2003. Due to the high response rate of 82%, we didn't examine the selection bias of the non-respondents.

The sample consisted of 52% college men, compared with 52% of men nationwide at the same age in the general population (Korean National Statistical Office, 2003). Twenty-one percent of the respondents attended public colleges and 79% private colleges, which approximates the Korean national distribution of full-time 4-year college students at 25% and 75%, respectively (Korean Council on University Education, 2003). Twenty-two percent of the respondents attended large colleges (>10,000 students), 49% medium-sized colleges (5,000 - 10,000 students), and 29% small colleges (> 5,000 students), compared to Korean national distribution of 26%, 53%, and 21%, respectively (Korean Council on University

Education, 2003). Among the respondents, 6.5% attended colleges with religious affiliation or education colleges and 3.1% attended women's colleges, compared with 5.7% and 3.3% nationwide, respectively (Korean Council on University Education, 2003). After 14 cases were excluded with insufficient records in conducting the data analyses, 2,385 cases were used.

3. Measures and Data Analysis

The questionnaire asked the respondents to answer a series of questions about their alcohol use and associated problems, tobacco and other drug use, lifestyles, demographic and background characteristics. The questionnaire instructed participants to define a "drink" in equivalent amounts of alcohol: a 12 oz (360-mL) bottle or can of beer, 4-oz (120mL) glass of wine, a 12 oz (360-mL) bottle or can of wine cooler, a shot (1.25-oz or 37-mL) of liquor either straight or in mixed drink, or a 55ml glass of soju. Soju, a kind of rice wine, and is the most popular alcohol beverage in Korea that contained 25% of alcohol (11g per a glass). The number of students reporting four or more of these alcohol-related problems was examined. All students were asked a series of 9 questions about their experiences of the consequences of other students' drinking (secondhand effect) during the current school year. The number of students experiencing four or more these secondhand effects was examined.

To evaluate cross-national differences, we pooled the two surveys into a single data file containing 10,904 U.S. students and 2,385 Korean students from 179 colleges. We analyzed the data using SPSS (version 17.0). Odds ratio (OR) was used to compare the likelihood of secondhand

effects between U.S. and Korean students. Multiple logistic regression models were used to control for age, drinking frequency, amount and residence status. The Generalized Estimating Equations (GEE) model (Liang and Zerger, 1992; Han, 1998) was used to make inferences on the estimated coefficients of the multiple logistic regression models using clustered binary outcomes from sampling.

III. Results

1. Respondent characteristics

In terms of the demographic characteristics, we found several statistically significant differences between the portion of US and Korea students who were male and female, were age 24 or older, were never married, and were living in campus housing. In general, the Korean college students tended to be older, were more likely to be unmarried, and were much more likely to be male and live off-campus with their parents or relatives. There were more male (52.2%) than female (47.8%) students in Korea, compared to male (35.8%) and female (64.2%) students in the US. The mean age (21.3) of the Korean students was slightly older than that of the US students (20.8) because of two and a half years of military service for all males in Korea which is usually completed during their university studies. More than half of the Korean students (60.0%) live off-campus with parents or relatives, compared to just 18.5% of the US students. Two in five (41.5%) US students lived in a university residence compared to only one in seven (15.0%) Korean students (Table1).

Table 1. Sample characteristics

	USA n=10,924	Korea n=2,385
Gender		
Male	35.8	52.2
Female	64.2	47.8
Age		
18 or less	10.2	7.5
19-20	40.0	37.5
21-23	36.5	33.2
24 or older	13.3	21.9
Marital status		
Never married	91.4	96.7
Married	6.5	2.0
Divorced, Separated, Widowed	2.1	1.3
Residence		
On campus	41.5	15.0
Off campus without parents or relatives	40.2	25.0
Off campus with parents or relatives	18.3	60.0

Note. Chi-square comparisons of US vs. Korean college students on each of the variables were significant at $p = .001$.

2. Secondhand effects

The problems students had experienced as a result of other students' drinking were summarized in Table 2. Korean students were less likely to experience the secondhand effects than US students, except for being a victim of sexual assault or date rape, finding vomit in the hall or bathroom of residence, and having to take care of drunken students. Among Korean students, 7.5% of the male and 3.0% of the female reported being a victim of sexual assault or date rape, while among US students, 1.5% of the male and 1.8% of the female reported being a victim of sexual assault or date rape. After controlling for age, the odds of secondhand effects show us similar results with frequency results. US students were more likely to be insulted or humiliated, have a serious argument and quarrel, be pushed, hit, or assaulted, and have experience an unwanted sexual advance.

After controlling for age, frequency of drinking, and amount of drinking in a row, the odds' differences were greater than the odds controlled by

age only. Korean male students were 0.45 times (95% CI = 0.37, 0.56) less likely to being insulted or humiliated, 0.36 times (95% CI = 0.29, 0.44) less likely to have a serious argument and quarrel, 0.44 times (95% CI = 0.34, 0.56) less likely to be pushed, hit, or assaulted, 0.72 times (95% CI = 0.61, 0.86) to have study/sleep interrupted, 0.35 times (95% CI = 0.28, 0.45) less likely to experience an unwanted sexual advance, and 0.45 times (95% CI = 0.37, 0.55) less likely to have four or more secondhand effects among the nine secondhand effects in Table 2, while they were 1.38 times (95% CI = 1.15, 1.66) more likely to have to take care of drunken students and 3.38 times (95% CI = 2.13, 5.36) more likely to be a victim of sexual assault or date rape than US male students. Particularly, more US female students were affected by all kinds of second-hand effects than Korean female students after controlling, but vomiting in hall or bathroom of residence and being a victim of sexual assaults or date rape were not shown significance.

Korean female students were 0.25 times (95% CI = 0.20, 0.32) less likely to being insulted or

humiliated, 0.21 times (95% CI = 0.16, 0.27) less likely to have a serious argument and quarrel, 0.51 times (95% CI = 0.38, 0.68) less likely to be pushed, hit, or assaulted, 0.63 times ((95% CI = 0.50, 0.80) less likely to have property damaged, 0.71 times (95% CI = 0.60, 0.85) less likely to have to take care of drunken student, 0.44 times (95% CI = 0.37,

0.52) less likely to have study/sleep interrupted, 0.07 times (95% CI = 0.05, 0.10) less likely to experience an unwanted sexual advance, and 0.20 times (95% CI = 0.16, 0.25) less likely to have four or more secondhand effects among the nine secondhand effects in Table 2 than US female students.

Table 2. Odds ratio of alcohol secondhand effect prevalence between Korean and US college students (Adj. OR and 95% CI)

	Male		Female	
Been insulted or humiliated	0.45	(0.37, 0.56)	0.25	(0.20, 0.32)
Had a serious argument and quarrel	0.36	(0.29, 0.44)	0.21	(0.16, 0.27)
Been pushed, hit, or assaulted	0.44	(0.34, 0.56)	0.51	(0.38, 0.69)
Had your property damaged	0.91	(0.74, 1.11)	0.63	(0.50, 0.80)
Had to take care of drunken student	1.38	(1.15, 1.66)	0.71	(0.60, 0.85)
Found vomit in the hall or bathroom of your residence	1.15	(0.97, 1.37)	1.12	(0.94, 1.33)
Had your studying/ sleeping interrupted	0.72	(0.61, 0.86)	0.44	(0.37, 0.52)
Experience an unwanted sexual advance	0.35	(0.28, 0.45)	0.07	(0.05, 0.10)
Been a victim of sexual assault or date rape	3.38	(2.13, 5.36)	1.00	(0.60, 1.68)
Had four or more of the above	0.45	(0.37, 0.55)	0.20	(0.16, 0.25)

Note. Controlled by age, drinking frequency, and drinking amount US is reference at Adj. OR.

As a results, Korean students were tend to more likely to have the physical secondhand effects, something like being a victim of sexual assault or date rape, having to take care of drunken students and finding vomit in the hall or bathroom of residence, than US students, while US students were tend to more likely to have the psychological or interpersonal secondhand effects, something like being insulted or humiliated, having a serious argument and quarrel, being pushed, hit, or assaulted, having study/sleep interrupted, and experiencing an unwanted sexual advance than Korean students.

IV. Discussion

In general, US students were more likely to

experience interrelationship problems (e.g., argue with friends, unplanned sexual activities, etc...) after drinking while Korean students were more likely to have individual drinking related problems (e.g., get hurt or injured, require medical treatment, etc...). Because of the generosity of alcohol use and drunkenness in Korea, most Koreans try to accept drinking behaviors and manners of drunkenness (Han,1998).

The effects of the perception of drinking and related problems in previous studies allow strong predictions to be made in determining alcohol use and abuse of college students and young adults (Perkins & Berkowitz, 1986; Prentice & Miller, 1993; Agostinelli *et al.*, 1995; Agostinelli & Smith, 1999; Perkins, 2002b; Luquis *et al.*, 2003; Lewis & Neighbors, 2004; Neighbors *et al.*, 2004; Nye *et al.*, 2006). One theory regarding the widespread use of

alcohol among college students involves misperceptions of peer drinking norms (Lewis & Neighbors, 2006). A large number of studies have demonstrated that college students misperceive peer drinking norms (Perkins & Berkowitz, 1986; Prentice & Miller, 1993; Lewis & Neighbors, 2004). College students specifically tend to overestimate heavy alcohol consumption of their peers (Perkins & Berkowitz, 1986). Misperception of peer drinking among college students has been suggested as a causal factor of heavy drinking (Agostinelli *et al.*, 1995; Neighbors & Larimer, 2004). Most college student overestimate peer drinking and these misperceptions have the strongest impact on personal alcohol consumption and associated negative consequences. Students' perception of their campus drinking norm is by far the strongest predictor of the amount of personal alcohol consumption (Perkins, 2002b). Students believe that drugs and alcohol are widely used by their peers, that alcohol drinking is a part of the college experience, and that their peers support strong drinking. Students not only agree that a high percentage of their peers are consuming alcohol, but they also suggest that these behaviors are harmless (Luquis *et al.*, 2003; Lee, 2004). Young people who reported that they were exposed to "wet" environments were more likely to begin binge drinking in college than their peers without similar exposures. Wet environments included friendship networks and affiliations within which binge drinking is common and endorsed, social, residential, and market surroundings in which drinking is prevalent and easily available and cheap alcohol (Weitzman *et al.*, 2003). College students are susceptible to peer influence and the team atmosphere supports social bonds (Nelson & Wechsler, 2001). We had expected that students

living off-campus with their parents or relatives would be less likely to use alcohol and to be binge drinkers in both countries. A significant interaction between residence and binge drinking showed that the protective effect of living with parents was stronger among US students than among Korean students. The association between students' alcohol consumption and their living arrangements may be the result of peer influence (Wechsler *et al.*, 2001). Alcohol use in college is a highly social behavior (Wechsler *et al.*, 2001). Students who are heavy episodic drinkers have more friends (Wechsler *et al.*, 1995b), and are more likely to be members of fraternities, sororities (Wechsler *et al.*, 2002) or athletic teams (Nelson and Wechsler, 2001). Living with parents exerted no protective effect against binge drinking in Korea.

Among US Students, 66% had experienced at least one adverse consequence from other students' drinking (Wechsler, *et al.*, 1995c). Students living on campuses with high levels of heavy drinking were more likely to have the adverse effects of other students' drinking, or secondary heavy drinking effects, than their counterparts at campuses where heavy drinking levels were lower (Wechsler, *et al.*, 1995c). Student drinking level is related to the experience of secondary heavy drinking effects at college. The more students themselves drank, the more likely they were to have experienced the adverse consequence from other students' drinking (Wechsler, *et al.*, 1995c). On campuses where more than half the students are binge drinkers, the vast majority of students who live on campus have experienced one or more problems as a result of others' binge drinking (Wechsler, *et al.*, 1995c).

Because more US students are living on campus than Korean students, US students are more likely to have interpersonal secondhand effects from other

students' drinking. Even though secondhand effects are problems from "other students' drinking," the likelihood of experiencing these consequences is greatly affected by the students' own drinking levels.

V. Conclusion

The purposes of this study were to compare differences of drinking related problems and second-hand effects among US and Korean college students. The results indicated that secondhand effects are more prevalent among US students than among Korean students. Our findings conclusively implicated that misperception to safe drinks, drunkenness and peer's binge drinking, generosity to drinking behaviors, and Korean parents' generous approval of children's heavy drinking all encourage Korean college students to be more likely to binge drink than US college students are.

The present study concluded that heavy and binge drinking are strongly associated with negative secondhand effects. Social supports like family, particularly parents and friends have a powerful influence on binge-drinking. First, Korean parents must teach their children to be moderate and responsible when drinking. Limited alcohol access and parents' who model temperance in drinking can lower secondhand effects of alcohol consumption. Second, college administrators need to offer or increase their substance-free housing options as one possible intervention to decrease heavy student drinking and its effects. Alcohol control by way of campus substance-free housing will also have a positive impact by lowering the likelihood of heavy episodic drinking on college campuses and its secondhand effects. In summary, these recommendations will enhance the lives and

academic performance of college students while limiting the negative experiences of students during college.

The results of this study must be viewed within the context of its limitations. Both CAS and KCAS are subject to the limitations of any self-reported survey. However, such surveys have been considered generally valid in examining alcohol responses (Cooper *et al.*, 1981; Midanik, 1988). Previous findings have indicated that if a self-report bias exists, it is largely limited to the heaviest use group (Room, 1971). Therefore, a possible bias should not affect such a conservative estimate of binge volume as five drinks (Wechsler *et al.*, 1997). Although our analysis suffered some limitations which are common in cross-national secondary analyses (Kohn, 1987; Kuo *et al.*, 2002), our results nevertheless provide some new data regarding potential cross-national differences which can be used for further research on binge drinking in campuses in both countries. Another study limitation was that CAS and KCAS were not conducted during the same time. However, seasonal differences can be overcome with the four-month duration of the semester.

Furthermore, there may be larger, unmeasured cultural differences that couldn't be included in the questionnaire. Other factors such as legal drinking age, price, alcohol marketing, and alcohol-related policies should also be examined. However, the survey data did not allow us to examine the differences in alcohol prices and related policies in binge alcohol use between the US and Korea.

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ABSTRACT

Objectives: To compare alcohol secondhand effects among US and Korean students.

Methods: Nationally representative 4-year colleges of two countries were involved in this cross-national comparison study. Data from the 2001 U.S. College Alcohol Study and the 2003 Korean College Alcohol Study came from 120 colleges in 38 U.S. states and the District of Columbia and 60 colleges in Korea. Randomly selected 4-year college students from the U.S. (10,924) and Korea (2,385) participated in the study using self-reports of alcohol use and perceptions of drinking as assessed by College Alcohol Study questionnaires.

Results: Korean students were tend to more likely to have being a victim of sexual assault or date rape, having to take care of drunken students and finding vomit in the hall or bathroom of residence, than US students, while US students were tend to more likely to have being insulted or humiliated, having a serious argument and quarrel, being pushed, hit, or assaulted, having study/sleep interrupted, and experiencing an unwanted sexual advance than Korean students.

Conclusion: In general, US students were more likely to suffer interrelationship problems after drinking while Korean students were more likely to have physical and individual drinking related problems.

Key Words: Alcohol use, College students, Alcohol-related problem, Secondhand effect, Cross-national

〈국문초록〉

한국과 미국 대학生の 간접음주피해 비교

목적: 이 연구는 한국과 미국대학生の 음주로 인한 간접피해수준을 상대적으로 비교하기 위해 설계되었다.

방법: 하버드대학교의 대학생음주연구(CAS)의 2001년도의 원자료 10,924명의 데이터와 한국대학생음주연구(KCAS)의 2003년도의 원자료 2,385명의 데이터를 하나의 파일에 함께 넣어서 분석하였다. 조사도구는 CAS의 대학생용 조사설문지를 사용하였으며, 한국의 주종과 량과 관련하여서는 표준잔과 량을 기준으로 적용하였다. 지난 한 달 동안의 음주하였다고 한 학생의 알코올관련문제 및 간접피해의 정도를 비교하였으며, 연령과 음주빈도와 음주량 통제하여 로지스틱회귀분석의 결과로 제시하였다.

결과: 한국대학생들이 술 취한 동료를 돌봄, 성적인 폭행, 데이트 강간, 구토물들을 발견하는 것 등의 간접피해를 많이 받는 반면에 미국대학생들은 모욕을 당함, 심하게 다툼, 밀침을 당함, 학업에 방해를 받음, 폭행을 당함, 원치 않은 섹스를 함 등의 간접피해를 더 많이 겪고 있다.

결론: 미국대학생들은 상호관계에 의한 간접피해를 많이 느끼는데 비해서, 한국대학생들은 개인적이고 신체적인 간접피해를 더 많이 느끼고 있다.

주제어: 음주, 대학생, 알코올문제, 간접피해, 국제비교