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Age of First Drink, First Alcohol Intoxication, and Alcohol Abuse Behaviors Among Occupational Therapy Students

Abstract

The purpose of the present study was to examine alcohol use behaviors among a national sample of occupational therapy students. Survey instruments, including the AUDIT and a checklist of risky and unprofessional behaviors related to alcohol abuse, were mailed to 1,000 occupational therapy students randomly selected from membership in the American Occupational Therapy Association. Surveys were returned by 309 student members; however, 24 indicated they were not currently occupational therapy students. Of the 285 participants, 97% reported drinking alcohol at some point over the previous year, with 1 in 5 drinking two or more times a week, often consuming four or more drinks per occasion. Predominant risky and unprofessional behaviors included binge drinking, saying something very inappropriate, combining alcohol and energy drinks, and attending class with a hangover. In general, these students tended to drink alcohol in a socially responsible and acceptable manner. Nevertheless, based on AUDIT guidelines, almost two-thirds of the students did consume alcohol on some singular or more frequent occurrence in the previous year at harmful or hazardous levels. As a consequence, the need to address the topic of alcohol abuse at both the university and the professional levels is warranted, along with the provision of counseling and occupation-based treatment services for those experiencing physiological and psychological problems stemming from alcohol abuse and/or addiction.

Comments

The author reports no conflicts of interest to disclose.

Keywords

health care, alcohol abuse, substance abuse, occupational performance, risky behaviors

Credentials Display

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Alcohol consumption and ensuing alcohol abuse among college students is a recognized national health care concern (Iconis, 2014; Knight et al., 2002; National Institute of Health, n.d.; Perkins, 2002; Wechsler & Nelson, 2008; White & Hingson, 2014). It has been estimated that over half (58%) of all college students consume alcohol in a previous month assessment, including over one-third (37.9%) who "binge drink," and more than 1 in 10 (12.5%) who engage in "heavy drinking" (i.e., binge drinking on 5 or more days in the previous 30 days) (U.S. Department of Health and Human Services, n.d.). In addition, 2 out of 5 college students have been found to display criteria symptomatic of alcohol abuse or alcohol dependence (Knight et al., 2002), along with various physically and psychologically harmful effects stemming from alcohol abuse (Fuertes & Hoffman, 2016; Mallett et al., 2013; Martinez, Sher, & Wood, 2014; Schuckit, Smith, Goncalves, & Anthenelli, 2016; White & Hingson, 2014).

Alcohol abuse tends also to be associated with numerous forms of self-destructive and/or problematic behaviors. Examples frequently demonstrated by college students include: binge drinking (Wechsler & Nelson, 2001; Winograd & Sher, 2015), driving under the influence of alcohol (Beck et al., 2010; Teeters, Pickover, Dennhardt, Martens, & Murphy, 2014), engaging in unprotected sex (Brown & Vanable, 2007; Scott-Sheldon, Carey, & Carey, 2010), physically harming oneself or others (Serras, Saules, Cranford, & Eisenberg, 2010), and skipping class or attending class with a hangover (Collins et al., 2014; Conway & DiPlacido, 2015).

Occupational Therapy Students

With over 200 fully accredited or developing educational programs in the United States, occupational therapy represents a well-established allied health academic major that is home to a substantial number of professional health care students (The American Occupational Therapy Association [AOTA], n.d.). Nevertheless, only minimal research exists regarding alcohol consumption and abuse by this population of students.

In an examination of alcohol and other drug use behaviors among a sample of 2,646 college students, including an unspecified number of occupational therapy students, in two university allied health programs and 12 non-university based degree granting nursing programs, Baldwin et al. (2006) found a high percentage (84%) of the complete sample reporting past year alcohol use, with nearly 1 in 5 (19%) recognizing they had a problem with alcohol use. However, occupational therapy student responses were subsumed under the general category of "allied health students," along with a variety of other allied health programs, including physical therapy, physician assistant, dental hygiene, pharmacy, etc., thus eliminating any definitive results for the occupational therapy student participants.

In a related study, Baldwin et al. (2008) examined the attitudes and behaviors of 423 allied health and physician assistant students specific to alcohol and other drug use. In this study, the allied health contingent included 81 occupational therapy students, and, unlike the previous study, a targeted assessment of the occupational therapy students' responses was presented. Two-thirds (68%) of the occupational therapy students admitted to at least monthly use of alcohol before reaching the U.S. legal drinking age of 21. Nine out of 10 (89%) occupational therapy students reported past-year alcohol use, with nearly one-fourth (23%) typically drinking five or more drinks per occasion when they did drink, along with over two-fifths (43%) consuming five or more drinks per occasion at some point during the prior 2 weeks. Supplementary past-year problem behaviors among occupational therapy students resulting from the use of alcohol or other drugs included driving after consuming three or more drinks of alcohol or using some other drug (51%) and experiencing blackouts (22%). No comparative analyses,

however, were conducted between the responses of the occupational therapy students and those of the total sample, thus restricting any direct statistical assessment.

McCombie, Evans, and Miller (2016) examined alcohol use among a small national sample (n = 77) of occupational therapy students. Most of the respondents (91%) in that study reported consuming alcohol in the previous year, averaging about three drinks per occasion. Negative behaviors associated with drinking alcohol included driving a car while intoxicated (37%), engaging in some (nondescript) behavior they later regretted (36%), attending class with a hangover (29%), and having difficulty recalling all or part of a previous evening of drinking (30%).

While the Baldwin et al. (2006), Baldwin et al. (2008), and McCombie et al. (2016) studies provide broad information on alcohol use by occupational therapy students, they lack the use of a valid assessment instrument to evaluate and classify the degree of problematic alcohol abuse. In addition, both the Baldwin et al. (2006) and the Baldwin et al. (2008) studies were limited to students at two institutions in one Midwestern state, rather than using a national sample to allow a more reflective assessment of the level of abuse nationally.

The present study responds to the dearth of research on alcohol abuse by occupational therapy students and the need to monitor substance abuse among these student preprofessionals, particularly that of alcohol use, given its easy access and broad public acceptance. The study proposed to assess the levels of harmful and hazardous alcohol use, and the commonality of risky behaviors resulting from alcohol consumption, among a national sample of entry-level occupational therapy students. This study had four primary objectives:

1. To assess the extent and degree of alcohol use, including possible levels of harmful and hazardous alcohol abuse, among occupational therapy students.
2. To ascertain the likelihood and commonality of their engagement in targeted risky and unprofessional behaviors stemming from alcohol use.
3. To determine the interactive relationship between age of first drink, age of first alcohol intoxication, level of harmful or hazardous alcohol abuse, and engagement in risky and unprofessional behaviors.
4. To address the potential implications for the occupational therapy profession and occupational therapy educational programs regarding alcohol abuse among this student population, if warranted by the study's results.

Method

Participants

The participants included 1,000 occupational therapy students whose names and mailing addresses were purchased from the AOTA based on membership in that organization. The sample, which excluded occupational therapy assistant students, was generated through a process by which each student member record was computer-assigned a random unique onetime identification number resulting in a computer-generated report providing the top 1,000 student names representing a broad national sample. The population of student members at the time of selection was 19,036, eliciting a study sample of just over one-twentieth (5.25%) of the total student affiliation.

Survey

The survey instrument was a multipage self-administered questionnaire. An initial question asking the participants whether they were students majoring in occupational therapy was incorporated to help certify the respondents' student status. This was followed by the 10-question Alcohol Use

Disorders Identification Test (AUDIT), developed by the World Health Organization. The AUDIT is a well-documented, easy to administer screening tool using simple closed-ended response options for assessing the level of alcohol consumption and the degree of problematic drinking (Babor, Higgins-Biddle, Saunders, & Monteiro, 2001). The AUDIT has demonstrated consistently high validity and reliability in use across countries and a variety of cultural settings (e.g., Daeppen, Yersin, Landry, Pécoud, & Decrey, 2000; Dybek et al., 2006; Osaki et al., 2014; Zavar, Jarahi, Alimoradi, & Khosravi, 2015). Moreover, the AUDIT has been shown to demonstrate reasonable psychometric properties among college students (Kokotailo et al., 2004), along with the AUDIT-C (composed of the first three questions of the AUDIT), which has been shown to be particularly effective in determining at-risk drinking behaviors among females (Demartini & Carey, 2012), who represent a significant proportion of occupational therapy students.

In addition to the AUDIT, the students were presented with a series of questions focusing on drinking behaviors, including age of first drink, age of first intoxication, and three items dealing with perceptions of their classmates and themselves having, or not having, a drinking problem.

The students also responded to a listing of 28 risky and unprofessional behavior items derived from a review of published studies examining alcohol ingestion and resultant adverse behaviors among college students. Risky behaviors involved those activities likely to result in physical harm, such as, "I drove a car after I had too much to drink," while unprofessional behaviors encompassed those deemed below or violating acceptable standards of professional conduct, such as, "I urinated in public when I was intoxicated," or "I went to class with a hangover." The students were asked to reflect on each behavior specific to the prior academic semester and respond in a closed-ended format, ranging from 0 = *never happened over the past semester* through 3+ = *happened three or more times the past semester*. Finally, a series of demographic items targeting gender, age, and GPA were also included for summative and comparative purposes.

Procedure

After receipt of institutional review board approval, the 1,000 students were sent a contact postcard announcing the study. This was followed 3 days later by a survey packet that included a cover letter describing the study, a copy of the research questionnaire, and a postage-paid return envelope. Follow-up postcards were mailed to all of the participants and served as a thank-you to those who had completed the study and as a request to participate for those who had not done so. Finally, a second identical survey packet was mailed to each participant as a mechanism to attempt to maximize the survey response rate. A 6-week response cut-off limit was established for accepting returned surveys.

Data Analysis

All quantitative data were entered into a statistical software package, Statistical Package for the Social Sciences® -Version 24 (IBM Corp., 2016), for analysis. Two item grouping scores as defined in the AUDIT scoring manual were computed (Barbor et al., 2001): a total item score and a partial score, which included only the first three items (i.e., the AUDIT-C). All statistical tests were two-tailed with significance levels set at 0.05, unless otherwise specified.

Results

Of the 1,000 surveys mailed, 309 (31%) were returned. Twenty-four respondents indicated that they were not occupational therapy students and were thus excluded from data analysis, leaving 285 (29%) student responders. Any discrepancy between this number and that cited for any individual item or comparative analysis stems from selective participant non-response to individual items.

There were 259 females (91%) and 25 males (9%), reflective of the gender composition of the occupational therapy student population, with a median age of 24 years (M = 26.45, *SD* = 6.33). The students recorded a mean GPA of 3.74 (*SD* = 0.25), ranging from 2.70 to 4.00.

Alcohol Assessment

The majority (n = 276, 97%) of the students consumed alcohol at some point over the previous year. Most of the students (n = 246, 90%) had their first lifetime drink and experienced their first incident of alcohol intoxication (n = 206, 83%) before attaining the U.S. legal drinking age of 21. The mean age of first drink was just under 17 years (M = 16.84 years, *SD* = 2.91), while the mean age of first intoxication (i.e., "drunk") was 18 years of age (M = 18.04, *SD* = 2.40). No student indicated that he or she had a serious alcohol problem. However, over one-third (n = 97, 35%) agreed that "one or more of *my classmates* has a serious alcohol problem," along with nearly one-quarter (n = 64, 23%) agreeing that "*more than half* of my class regularly abuses alcohol."

AUDIT Scores

The AUDIT enables individual item assessment, along with partial and total composite score analysis based on selective item groupings. Cronbach's alpha was computed as an assessment of the internal consistency of the AUDIT for this sample. This reliability measure was presented acceptable at $\alpha = .709$. Per AUDIT interpretive guidelines (Babor et al., 2001), having more than two drinks on a typical occasion and/or having six or more drinks on any singular occasion is reflective of alcohol consumption at a hazardous level. Based on student responses, the percentage of students consuming alcohol at such a level varied from 41% (n = 110) (typically having more than two drinks) to 52.5% (n = 145) (having had six or more drinks on at least one occasion). A crosstab configuration of responses to these two questions suggests that 61% consumed alcohol at a hazardous level at some point in the previous year.

The next three AUDIT questions target elements specific to alcohol dependence, including the inability to stop drinking once started, failing to do what is normally expected because of one's drinking, and the need for a first drink in the morning to get oneself going after a heavy drinking session. AUDIT guidelines propose that affirmative responses to any of these items, especially on a weekly or daily basis, defines and implies the incipience of alcohol dependency (Babor et al., 2001). Crosstab analyses found nearly 1 in 20 (18.5%, n = 51) students experienced one or more of the three behaviors, though generally on a monthly or less frequent basis.

The final four questions of the AUDIT address aspects of harmful alcohol use, including guilt stemming from drinking, not remembering what happened the night before because of drinking, obtaining an injury because of drinking, and having someone express concern about one's drinking behavior. One-third (33%, n = 91) of the respondents purportedly experienced guilt resulting from their drinking. A smaller percentage (29%, n = 81) had occasion of not being able to remember what happened the night before because of their drinking. One in 8 (12%, n = 32) acknowledged they or someone else had been injured because of their drinking. Finally, only 5% (n = 13) admitted that someone expressed concern about their drinking or advised that they should cut down on their drinking. For these latter two questions, however, the majority of the incidents had not occurred in the previous 12 months. Crosstab analyses indicated nearly half of the students (48%, n = 132) responded "yes" to one or more of the above signifying rudimentary harmful levels of alcohol abuse over the past year.

Finally, two summative composite scores were calculated. The first, defined as the "AUDIT-C," included the initial three questions focusing on how often one drinks, how many drinks per occasion,

and how many times six or more drinks are consumed. A total score equal to or greater than 4 for men and 3 for women has been proposed as indicative of risky and unhealthy alcohol misuse (i.e., problematic alcohol consumption), while a score of equal to or greater than 5 for men and 4 for women is reflective of alcohol abuse or dependence (Bradley et al., 2007; Bush, Kivlahan, McDonell, Fihn, & Bradley, 1998). The results found that 59% of the students in this sample present with response scores reflecting indications of occasional problematic drinking behavior, while 40% present with response scores representing symptoms of alcohol abuse or dependence. No differences (equal variances not assumed) were found between females (X = 3.20) and males (X = 3.27) for "AUDIT-C" scores (t (27.545) = -.219, p = .828).

The second composite score comprised a summation of all 10 AUDIT questions, providing an average total score of 4.53 (*SD* = 3.23), ranging from 0 to 15. Guidelines suggest that while there is inadequate research to confidently establish cutoff values to distinguish harmful from hazardous drinking behaviors, total scores of 7 to 15 for females and 8 to 15 for males represent moderate levels of alcohol behavior problems, while scores greater than 15 signify high problematic alcohol consumption behavior levels. Using this criteria, the results found that while no students attained a score reflecting high problematic drinking behaviors, nearly one-quarter (24%) of all of the participants demonstrated moderate problematic behavior levels. Again, no differences (equal variances not assumed) were found between females (X = 4.49) and males (X = 5.00) (t (25.611) = -.764, p = .452).

Small, but significant, negative relationships were found between the age of first drink and the total AUDIT score (r (268) = -.245, $p < .001$), and between the age of first intoxication and the total AUDIT score (r (268) = -.236, $p < .001$), signifying some minor degree of predictive use for each of these two factors regarding unhealthy levels of alcohol consumption in college.

Risky and Unprofessional Behaviors

The students were presented with a list of 28 risky and unprofessional (R-U) behaviors frequently stemming from alcohol consumption among college students. Slightly over one-third of the participants (35%) reported not engaging in any R-U behaviors, while nearly a third (31%) admittedly engaged in four or more such behaviors over the course of the prior semester, occasionally more than once. The most often cited R-U behaviors included: binge drinking (45%), saying something inappropriate (27%), attending class with a hangover (18%), mixing alcohol and energy drinks (17%), and/or smoking marijuana in the same time frame as drinking alcohol (13%). Behaviors that no students reported to engage in while drinking included: being arrested, damaging a car, getting a tattoo, or missing class due to being intoxicated. A listing of those behaviors engaged in by two or more students is presented in Table 1.

Table 1

R-U Behaviors Engaged in at Least Once Per Semester

R-U Behavior	%	n
I binge drank a large quantity alcohol in a short time frame	44.5%	123
I said something very inappropriate while under the influence of alcohol	27.0%	74
I went to class with a hangover	18.1%	50
I mixed energy drinks and alcohol	17.0%	47
I drank alcohol and smoked marijuana in the same time frame	12.7%	35
I threw up, i.e., vomited, in public due to my excessive drinking	12.0%	33

I rode in a car with someone driving who had been drinking excessively	11.2%	31
I engaged in unprotected sex while I was under the influence of alcohol	10.9%	30
I drove a car after I had had too much to drink	8.3%	23
I went to a class immediately after having a drink of alcohol	6.9%	19
I urinated in public when I was intoxicated	6.5%	18
I freely engaged in sex with someone I did not know while I was intoxicated	2.5%	7
I hit or slapped someone while I was under the influence of alcohol	2.5%	7
I passed out in public due to my excessive drinking	2.5%	6
I was kicked out of a party, etc., due to my inappropriate behavior from drinking	1.5%	4
I missed a class because I felt too hungover to attend the class	1.4%	4
I took alcohol with me to school because I knew I would need a drink	1.1%	3
I attended a class when intoxicated	0.7%	2
I left a class early to go have a drink of an alcoholic beverage	0.7%	2
I shoplifted something while I was under the influence of alcohol	0.7%	2
I got into a physical fight while I was under the influence of alcohol	0.7%	2

Comparative Assessment

The students were classified into one of three age groupings based on age of first drink: 17 years of age and younger, aged 18 to 20 years, and aged 21 years and older. A significant overall effect (ANOVA) was found for total AUDIT score ($F(2, 265) = 10.69$, $p < .001$) by age grouping. Post hoc analyses (*Scheffe*) found no difference between the 17 years of age and younger group ($X = 5.06$) and the aged 18 to 20 years group ($X = 4.43$); however, significant differences were found between the 17 years of age and younger group and the aged 21 years and older group ($X = 2.07$) ($p < .001$), and between the aged 18 to 20 years group and the aged 21 years and older group ($p = .003$), with the oldest age grouping presenting with the lowest total AUDIT score.

The students were similarly divided into the same three age groupings based on age of first intoxication. Once more, a significant overall effect (ANOVA) was found for total AUDIT score ($F(2, 242) = 9.18$, $p < .001$). Post hoc analyses (*Scheffe*) found no difference between the aged 17 years and younger group ($X = 5.75$) and the aged 18 to 20 years group ($X = 4.81$). Significant differences (p's < .001) were found between the aged 17 years and younger group and the aged 21 years and older group ($X = 3.26$), and between the aged 18 to 20 years group and the aged 21 years and older group ($p = .022$), indicative of higher current AUDIT totals for those who experienced their first alcohol intoxication prior to attaining the U.S. legal drinking age of 21 years.

Discussion

This research examined the likelihood of alcohol abuse along with the frequency of engagement in risky and unprofessional behaviors resulting from drinking alcohol among a national sample of occupational therapy students. Unlike previous research, the present study used a valid and widely recognized alcohol screening tool, the AUDIT, for identifying levels of harmful and hazardous alcohol consumption. The study also incorporated a checklist of risky and unprofessional behavior items generated from a review of the literature on college students and alcohol consumption.

Nearly all of the occupational therapy students in this study reported drinking alcohol at some point during the previous year, though the frequency of consumption and the amount consumed varied considerably. Most drank at socially accepted frequency levels of typically no more than once a week or

less often, usually consuming only one or two drinks per occasion; however, one-quarter did consume alcohol substantially more often, ranging from two to four or more times a week, and in greater amounts with roughly 1 in 10 having five or more drinks per outing. For the majority, consumption of alcohol began prior to reaching the U.S. legal drinking age of 21, with three-quarters having their first drink at or before age 18. By age 19, nearly three-fourths of all of the students admitted to having been intoxicated at least once. One in 10 students experienced his or her first episode of alcohol intoxication at or before the age of 15.

Studies support the finding that the younger a person starts drinking alcohol (DeWit, Adlaf, Offord, & Ogborne, 2000; Grant, Stinson, & Harford, 2001; Hu, Eaton, Anthony, Wu, & Cottler, 2017; LaBrie, Rodrigues, Schiffman, & Tawalbeh, 2008; White & Hingson, 2014) and the earlier a person experiences his or her first alcohol intoxication (Hingson, Heeren, Winter, & Wechsler, 2003; Hingson, Heeren, Zakocs, Winter, & Wechsler, 2003; Morean et al., 2014), the more likely alcohol is to have a significant and lasting negative impact on his or her life. The results from the current study appear to support this assessment. In the present study, where almost half (44%) of the students had their first drink before the age of 17, along with nearly one-quarter (24%) experiencing their first alcohol intoxication at or before the age of 16, significant negative relationships were found between age of first drink and first intoxication with total AUDIT score. The younger these students started drinking and experiencing their first alcohol intoxication, the higher their scores were on the AUDIT. However, the older the students were when they had their first drink of alcohol or when they first experienced alcohol intoxication, the less likely they were to suffer from alcohol distress issues as defined by the AUDIT.

Roughly two-thirds of these students were found to drink alcohol periodically at a hazardous level, along with nearly half engaging in occasional harmful alcohol abuse. Further, as many as 2 out of 5 students presented with initial symptoms of alcohol abuse and alcohol dependence as indicated by their composite scores on the AUDIT-C. Based on the frequency and amount of alcohol consumption, AUDIT scoring and the corresponding intervention guidelines (Babor et al., 2001) advise basic alcohol education as a recommended course of response for the majority (85%) of these students. For the remaining students, AUDIT guidelines propose “a brief intervention using simple advice and patient education materials” (Barbor et al., 2001, p. 22).

In combination with the incidence of sporadic or recurrent drinking at harmful or hazardous levels, many students engaged in various R-U behaviors. The most common risky behavior, noted by just under half of these students, was “binge drinking.” This form of heavy episodic drinking has been linked to a wide range of health and social problems, from an increase in alcohol related accidents and injuries (Hingson, Zha, & Weitzman, 2009) to an increased incidence of sexual assault and rape (Abbey, 2002; Mohler-Kuo, Dowdall, Koss, & Wechsler, 2004).

A second primary risky behavior indicated by nearly 1 out of 6 students was combining alcohol and energy drinks. This combination has been shown to be significantly related to a heightened motivation to drink (Marczinski, Fillmore, Henges, Ramsey, & Young, 2013) and consequential problematic alcohol consumption (Snipes, Jeffers, Green, & Benotsch, 2015), along with an increase in unsafe and life-threatening behaviors, such as drinking and driving (Woolsey et al., 2015). Additional risky behaviors, reported by at least 1 out of 10 students, included combining alcohol and marijuana, engaging in unprotected sex, and riding in a car with someone who was intoxicated.

Unprofessional behaviors varied from saying something inappropriate to vomiting in public. While not life threatening, as in the case of risky behaviors, engagement in such actions does present

evidence of the need for specialized counseling. Unprofessional behaviors stemming from alcohol abuse also appear to reach the occupational therapy classroom setting. While no students in this study reported missing class due to intoxication, 19 reportedly attended class immediately after having a drink of alcohol, including two students who admitted going to class in an intoxicated state. Moreover, nearly 1 out of 5 students acknowledged they went to class with a hangover, the typical symptoms of which include headache, fatigue and weakness, decreased ability to concentrate, increased sensitivity to light and sound, and lethargy (Frone, 2006; Mayo Clinic, n.d.; Wiese, Shlipak, & Browner, 2000). Thus, even in the absence of alcohol consumption immediately before or during class, a student's functional and cognitive performance and resultant learning and class interaction may be negatively impacted by the after effects of a previous evening of overindulgence.

Limitations

Several pertinent limitations need to be acknowledged when reviewing the results and conclusions of this study. First, given the less than ideal response rate (29%), the potential exists that only those students consuming and, on occasion, abusing alcohol ultimately elected to complete the survey, while the "true" majority of students (i.e., non-respondents) may tend to refrain from alcohol consumption, or at least consumption at unsafe levels. In addition, the current study used a cross-sectional, rather than a longitudinal, design making inferences specific to causality limited and problematic. Furthermore, the data collection process tended to rely on the use of retrospective and self-report information. Accordingly, the students' responses were dependent on their ability to recall their drinking behaviors over the previous year correctly. Research on memory recall suggests that accuracy of recollection does decline over time (Bound, Brown, & Mathiowetz, 2001), resulting in a tendency to replace uncertainty with self-created "memories," often biased toward socially desirable behaviors, bringing into question the correctness of the student responses (Krumpal, 2013; Wilson, Carter, & Berg, 2009). However, numerous studies have provided support for the validity and reliability of self-report measures regarding alcohol use (Del Boca & Darkes, 2003; Friesema, et al., 2004; Lintonen, Ahlström, & Metso, 2004), signifying their usefulness in assessing alcohol consumption behaviors. Moreover, should a social desirability bias exist, the consequential result would suggest even greater problematic levels than those reported in the present study.

Conclusion

Research on the scale and frequency of alcohol consumption among occupational therapy students has received limited address in the literature. The present study assessed the extent of harmful and hazardous drinking among these students, along with an examination of the incidence of engagement in a variety of R-U behaviors associated with alcohol abuse. The results suggest that while most occupational therapy students consume alcohol in a socially responsible and acceptable manner, a small portion of students do tend to over-imbibe and abuse alcohol. Furthermore, a segment of these students also appears to engage in problematic or reckless behaviors directly related to the consumption of alcohol. In accordance with AOTA's *Vision 2025* (AOTA, 2016), stressing a maximization of "health, well-being, and quality of life" (para 1), it is incumbent on the profession and academic programs to monitor alcohol and other substance abuse in their student populations and promote healthy personal and professional development among these prepractitioners. Moreover, it is also critically important for the profession and for academic programs to provide educational and emotional support, along with comprehensive occupation-based treatment approaches, to those experiencing the physiological and psychological problems stemming from alcohol abuse and addiction. The provisions

of timely rehabilitation and counseling services are fundamental to eliminating or reducing the recurrence of substance abuse and are essential for the promotion of long-term recovery.

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References

Abbey, A. (2002). Alcohol-related sexual assault: A common problem among college students. *Journal of Studies on Alcohol* (Suppl. 14), 118-128. https://doi.org/10.15288/jsas.2002.s14.118

American Occupational Therapy Association. (n.d.). Education and careers: Find a school. Retrieved from http://www.aota.org/Education-Careers/Find-School.aspx

American Occupational Therapy Association. (2016). *AOTA unveils Vision 2025*. Retrieved from https://www.aota.org/AboutAOTA/vision-2025.aspx

Barbor, T. F., Higgins-Biddle, J. C., Saunders, J. B., & Monteiro, M. (2001). The Alcohol Use Disorders Identification Test: Guidelines for use in primary care (2nd edition). World Health Organization, Department of Mental Health and Substance Dependence. Document Number: WHO/MSD/MSB/01.6a

Baldwin, J. N., Davis-Hall, R. E., DeSimone, E. M., II., Scott, D. M., Agrawal, S., & Reardon, T. P. (2008). Survey of attitudes and behaviors toward alcohol and other drug use in allied health and physician assistant students. *Journal of Allied Health*, *37*(3), 156-161. https://www.ncbi.nlm.nih.gov/pubmed/18847112

Baldwin, J. N., Scott, D. M., Agrawal, S., Bartek, J. K., Davis-Hall, R. E., Reardon, T. P., & DeSimone, E. M., II. (2006). Assessment of alcohol and other drug use behaviors in health professions students. *Substance Abuse*, *27*(3), 27-37. https://doi.org/10.1300/j465v27n03_05

Beck, K. H., Kasperski, S. J., Caldeira, K. M., Vincent, K. B., O'Grady, K. E., & Arria, A. M. (2010). Trends in alcohol-related traffic risk behaviors among college students. *Alcoholism: Clinical and Experimental Research*, *34*(8), 1472-1478. https://doi.org/10.1111/j.1530-0277.2010.01232.x

Bound, J., Brown, C., & Mathiowetz, N. (2001). Measurement error in survey data. *Handbook of Econometrics*, *5*, 3705-3843. https://doi.org/10.1016/S1573-4412(01)05012-7

Bradley, K. A., DeBenedetti, A. F., Volk, R. J., Williams, E. C., Frank, D., & Kivlahan, D. R. (2007). AUDIT-C as a brief screen for alcohol misuse in primary care. *Alcoholism: Clinical and Experimental Research*, *31*(7), 1208-1217. https://doi.org/10.1111/j.1530-0277.2007.00403.x

Brown, J. L., & Vanable, P. A. (2007). Alcohol use, partner type, and risky sexual behavior among college students: Findings from an event-level study. *Addictive Behaviors*, *32*(12), 2940-2952. https://doi.org/10.1016/j.addbeh.2007.06.011

Bush, K., Kivlahan, D. R., McDonell, M. B., Fihn, S. D., & Bradley, K. A. (1998). The AUDIT alcohol consumption questions (AUDIT-C): An effective brief screening test for problem drinking. *Archives of Internal Medicine*, *158*(16), 1789-1795. https://doi.org/10.1001/archinte.158.16.1789

Collins, S. E., Kirouac, M., Taylor, E., Spelman, P. J., Grazioli, V., Hoffman, G., . . . Hicks, J. (2014). Advantages and disadvantages of college drinking in students' own words: Content analysis of the decisional balance worksheet. *Psychology of Addictive Behaviors*, *28*(3), 727-733. https://doi.org/10.1037/a0036354

Conway, J. M., & DiPlacido, J. (2015). The indirect effect of alcohol use on GPA in first-semester college students: The mediating role of academic effort. *Journal of College Student Retention: Research, Theory & Practice*, *17*(3), 303-318. https://doi.org/10.1177/1521025115575705

Daeppen, J. B., Yersin, B., Landry, U., Pécoud, A., & Decrey, H. (2000). Reliability and validity of the Alcohol Use Disorders Identification Test (AUDIT) imbedded within a general health risk screening questionnaire: Results of a survey in 332 primary care patients. *Alcoholism: Clinical and Experimental Research*, *24*(5), 659-665. https://doi.org/10.1111/j.1530-0277.2000.tb02037.x

Del Boca, F. K., & Darkes, J. (2003). The validity of self-reports of alcohol consumption: State of the science and challenges for research. *Addiction*, *98*(s2), 1-12.https://doi.org/10.1046/j.1359-6357.2003.00586.x

DeMartini, K. S., & Carey, K. B. (2012). Optimizing the use of the AUDIT for alcohol screening in college students. *Psychological Assessment*, *24*(4), 954-963. https://doi.org/10.1037/a0028519

DeWit, D. J., Adlaf, E. M., Offord, D. R., & Ogborne, A. C. (2000). Age at first alcohol use: A risk factor for the development of alcohol disorders.

American Journal of Psychiatry, *157*(5), 745-750. https://doi.org/10.1176/appi.ajp.157.5.745

Dybek, I., Bischof, G., Grothues, J., Reinhardt, S., Meyer, C., Hapke, U., . . . Rumpf, H. J. (2006). The reliability and validity of the Alcohol Use Disorders Identification Test (AUDIT) in a German general practice population sample. *Journal of Studies on Alcohol*, *67*(3), 473-481. https://doi.org/10.15288/jsa.2006.67.473

Friesema, I. H. M., Veenstra, M. Y., Zwietering, P. J., Knottnerus, J. A., Garretsen, H. F. L., & Lemmens, P. H. H. M. (2004). Measurement of lifetime alcohol intake: Utility of a self-administered questionnaire. *American Journal of Epidemiology*, *159*(8), 809-817. https://doi.org/10.1093/aje/kwh102

Frone, M. R. (2006). Prevalence and distribution of alcohol use and impairment in the workplace: A U.S. national survey. *Journal of Studies on Alcohol*, *67*(1), 147-156. https://doi.org/10.15288/jsa.2006.67.147

Fuertes, J. N., & Hoffman, A. (2016). Alcohol consumption and abuse among college students: Alarming rates among the best and the brightest. *College Student Journal*, *50*(2), 236-240. Retrieved from: https://eric.ed.gov/?id=EJ1104161

Grant, B. F., Stinson, F. S., & Harford, T. C. (2001). Age at onset of alcohol use and DSM-IV alcohol abuse and dependence: A 12-year follow-up. *Journal of Substance Abuse*, *13*(4), 493-504. https://doi.org/10.1016/S0899-3289(01)00096-7

Hingson, R., Heeren, T., Winter, M. R., & Wechsler, H. (2003). Early age of first drunkenness as a factor in college students' unplanned and unprotected sex attributable to drinking. *Pediatrics*, *111*(1), 34-41. https://doi.org/10.1542/peds.111.1.34

Hingson, R., Heeren, T., Zakocs, R., Winter, M., & Wechsler, H. (2003). Age of first intoxication, heavy drinking, driving after drinking and risk of unintentional injury among U.S. college students. *Journal of Studies on Alcohol*, *64*(1), 23-31. https://doi.org/10.15288/jsa.2003.64.23

Hingson, R. W., Zha, W., & Weitzman, E. R. (2009). Magnitude of and trends in alcohol-related mortality and morbidity among U.S. college students ages 18-24, 1998-2005. *Journal of Studies on Alcohol and Drugs*, (s16), 12-20. https://doi.org/10.15288/jsads.2009.s16.12

Hu, H., Eaton, W. W., Anthony, J. C., Wu, L. T., & Cottler, L. B. (2017). Age of first drunkenness and risks for all-cause mortality: A 27-year follow-up from the epidemiologic catchment area study. *Drug and Alcohol Dependence*, *176*, 148-153. https://doi.org/10.1016/j.drugalcdep.2017.03.015

IBM Corp. (2016). IBM SPSS Statistics for Windows, Version 24.0. Armonk, NY: IBM Corp.

Iconis, R. (2014). Understanding alcohol abuse among college students: Contributing factors and strategies for intervention. *Contemporary Issues in Education Research*, *7*(3), 243-248. Retrieved from https://eric.ed.gov/?id=EJ1073278

Knight, J. R., Wechsler, H., Kuo, M., Seibring, M., Weitzman, E. R., & Schuckit, M. A. (2002). Alcohol abuse and dependence among U.S. college students. *Journal of Studies on Alcohol*, *63*(3), 263-270. https://doi.org/10.15288/jsa.2002.63.263

Kokotailo, P. K., Egan, J., Gangnon, R., Brown, D., Mundt, M., & Fleming, M. (2004). Validity of the alcohol use disorders identification test in college students. *Alcoholism: Clinical and Experimental Research*, *28*(6), 914-920. https://doi.org/10.1097/01.ALC.0000128239.87611.F5

Krumpal, I. (2013). Determinants of social desirability bias in sensitive surveys: A literature review. *Quality & Quantity*, *47*(4), 2025-2047. https://doi.org/10.1007/s11135-011-9640-9

LaBrie, J. W., Rodrigues, A., Schiffman, J., & Tawalbeh, S. (2008). Early alcohol initiation increases risk related to drinking among college students. *Journal of Child & Adolescent Substance Abuse*, *17*(2), 125-141. https://doi.org/10.1300/J029v17n02_08

Lintonen, T., Ahlström, S., & Metso, L. (2004). The reliability of self-reported drinking in adolescence. *Alcohol and Alcoholism*, *39*(4), 362-368. https://doi.org/10.1093/alcalc/agh071

Mallett, K. A., Varvil-Weld, L., Borsari, B., Read, J. P., Neighbors, C., & White, H. R. (2013). An update of research examining college student alcohol-related consequences: New perspectives and implications for interventions. *Alcoholism: Clinical and Experimental Research*, *37*(5), 709-716. https://doi.org/10.1111/acer.12031

Marczinski, C. A., Fillmore, M. T., Henges, A. L., Ramsey, M. A., & Young, C. R. (2013). Mixing an energy drink with an alcoholic beverage increases motivation for more alcohol in college students. *Alcoholism: Clinical and Experimental Research*, *37*(2), 276-283. https://doi.org/10.1111/j.1530-0277.2012.01868.x

Martinez, J. A., Sher, K. J., & Wood, P. K. (2014). Drinking consequences and subsequent drinking in college students over 4 years. *Psychology of Addictive Behaviors*, *28*(4), 1240-1245. https://doi.org/10.1037/a0038352

Mayo Clinic. (n.d.). *Hangovers: Symptoms and causes*. Retrieved from https://www.mayoclinic.org/diseases-conditions/hangovers/symptoms-causes/syc-20373012

McCombie, R. P., Evans, A., & Miller, M. J. (2016). Alcohol use by occupational therapy students: An exploratory study. *Occupational Therapy in Mental Health*, *32*(1), 1-15. https://doi.org/10.1080/0164212X.2015.1079514

Mohler-Kuo, M., Dowdall, G. W., Koss, M. P., & Wechsler, H. (2004). Correlates of rape while intoxicated in a national sample of college women. *Journal of Studies on Alcohol*, *65*(1), 37-45. https://doi.org/10.15288/jsa.2004.65.37

Morean, M. E., Kong, G., Camenga, D. R., Cavallo, D. A., Connell, C., & Krishnan-Sarin, S. (2014). First drink to first drunk: Age of onset and delay to intoxication are associated with adolescent alcohol use and binge drinking. *Alcoholism: Clinical and Experimental Research*, *38*(10), 2615-2621. https://doi.org/10.1111/acer.12526

National Institute of Health. (n.d.). *National Institute of Alcohol Abuse and Alcoholism: College drinking*. Retrieved from https://www.niaaa.nih.gov/alcohol-health/special-populations-co-occurring-disorders/college-drinking

Osaki, Y., Ino, A., Matsushita, S., Higuchi, S., Kondo, Y., & Kinjo, A. (2014). Reliability and validity of the alcohol use disorders identification test—consumption in screening for adults with alcohol use disorders and risky drinking in Japan. *Asian Pacific Journal of Cancer Prevention*, *15*(16), 6571-6574. https://doi.org/10.7314/APJCP.2014.15.16.6571

Perkins, H. W. (2002). Surveying the damage: A review of research on consequences of alcohol misuse in college populations. *Journal of Studies on Alcohol*, (s14), 91-100. https://doi.org/10.15288/jsas.2002.s14.91

Schuckit, M. A., Smith, T. L., Goncalves, P. D., & Anthenelli, R. (2016). Alcohol-related blackouts across 55 weeks of college: Effects of European-American ethnicity, female sex, and low level of response to alcohol. *Drug and Alcohol Dependence*, *169*, 163-170. https://doi.org/10.1016/j.drugalcdep.2016.10.026

Scott-Sheldon, L. A., Carey, M. P., & Carey, K. B. (2010). Alcohol and risky sexual behavior among heavy drinking college students. *AIDS and Behavior*, *14*(4), 845-853. https://doi.org/10.1007/s10461-008-9426-9

Serras, A., Saules, K. K., Cranford, J. A., & Eisenberg, D. (2010). Self-injury, substance use and associated risk factors in a multi-campus probability sample of college students. *Psychology of Addictive Behaviors*, *24*(1), 119-128. https://doi.org/10.1037/a0017210

Snipes, D. J., Jeffers, A. J., Green, B. A., & Benotsch, E. G. (2015). Alcohol mixed with energy drinks are robustly associated with patterns of problematic alcohol consumption among young adult college students. *Addictive Behaviors*, *41*, 136-141. https://doi.org/10.1016/j.addbeh.2014.10.010

Teeters, J. B., Pickover, A. M., Dennhardt, A. A., Martens, M. P., & Murphy, J. G. (2014). Elevated alcohol demand is associated with driving after drinking among college student binge drinkers. *Alcoholism: Clinical and Experimental Research*, *38*(7), 2066-2072. https://doi.org/10.1111/acer.12448

U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration. (n.d.). Results from the 2015 National Survey on Drug Use and Health: Detailed Tables. Retrieved from https://www.samhsa.gov/data/sites/default/files/NSDUH-DetTabs-2015/NSDUH-DetTabs-2015/NSDUH-DetTabs-2015.htm#tab6-84b

Wechsler, H., & Nelson, T. F. (2001). Binge drinking and the American college students: What's five drinks? *Psychology of Addictive Behaviors*, *15*(4), 287-291. https://doi.org/10.1037/0893-164X.15.4.287

Wechsler, H., & Nelson, T. F. (2008). What we have learned from the Harvard School of Public Health College Alcohol Study: Focusing attention on college student alcohol consumption and the environmental conditions that promote it. *Journal of Studies on Alcohol and Drugs*, *69*(4), 481-490. https://doi.org/10.15288/jsad.2008.69.481

White, A., & Hingson, R. (2014). The burden of alcohol use: Excessive alcohol consumption and related consequences among college students. *Alcohol Research: Current Reviews*, *35*(2), 201-218. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3908712/

Wiese, J. G., Shlipak, M. G., & Browner, W. S. (2000). The alcohol hangover. *Annals of Internal Medicine*, *132*(11), 897-902. https://doi.org/107326/0003-4819-132-11-200006060-00008

Wilson, I. B., Carter, A. E., & Berg, K. M. (2009). Improving the self-report of HIV antiretroviral medication adherence: Is the glass half full or half empty? *Current HIV/AIDS Reports*, *6*(4), 177-186. https://doi.org/10.1007/s11904-009-0024-x

Winograd, R. P., & Sher, K. J. (2015). *Binge drinking and alcohol misuse: Among college students and young adults*. Boston, MA: Hogrefe Publishing Corporation.

Woolsey, C. L., Williams, R. D., Jr., Housman, J. M., Barry, A. E., Jacobson, B. H., & Evans, M. W., Jr. (2015). Combined use of alcohol and energy drinks increases participation in high-risk drinking and driving behaviors among college students. *Journal of Studies on Alcohol and*

Drugs, *76*(4), 615-619. https://doi.org/10.15288/jsad.2015.76.615

World Health Organization. (2001). AUDIT: The alcohol use disorders identification test: Guidelines for use in primary care (2nd ed.). Geneva: Author. Retrieved from http://www.who.int/iris/handle/10665/67205

Zavar, A., Jarahi, L., Alimoradi, B., & Khosravi, N. (2015). The Alcohol Use Disorders Identification Test (AUDIT): Reliability and validity of the Persian version. *Asia Pacific Journal of Medical Toxicology*, *4*(1), 37-42. https://doi.org/10.22038/apjmt.2015.4161