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Influence Of Age And Undergraduate College On Physical Activity Habits And Alcohol Use

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INFLUENCE OF AGE AND UNDERGRADUATE COLLEGE ON PHYSICAL
ACTIVITY HABITS AND ALCOHOL USE

By

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B.S., Western Michigan University, 2010

A Research paper

Submitted in Partial Fulfillment of the Requirements for the
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Department of Kinesiology
in the Graduate School
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RESEARCH PAPER APPROVAL

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Masters of Science in Education

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Approved by:

Dr. Phil Anton

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Southern Illinois University Carbondale

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CHAPTER 1

INTRODUCTION

Drinking has become a behavior that college students see as an integral part of their college experience. In 1998, Johnston, O'Malley, and Bachman found that roughly 87 percent of college students have tried alcohol. There are over nine million college students in the United States and according to a 2009 study by Hingson, Zha, & Weitzman, approximately 45 percent reported engaging in binge drinking at least once in the preceding two weeks during their data collection. In this study, binge drinking was defined as five or more drinks for men or four or more drinks for females in one sitting at least once in the previous two weeks.

Binge drinking poses serious health and safety risks, as well as other negative consequences for students, their families, and their college community. Each year, college drinking is estimated to contribute to approximately 1,800 deaths from unintentional alcohol-related injuries, 599,000 injuries, and 696,000 assaults (Hingson, Zha, & Weitzman, 2009). Roughly one-quarter of college students also report having negative academic consequences because of their drinking habits. These consequences include but are not limited to: missing class, falling behind in class, performing poorly on exams, and receiving lower grades on papers and lower grades overall (Pascarella, Goodman, Seifert, Tagliapietra-Nicoli, & Whitt, 2007; Wechsler et al., 2002).

Given the public health problems associated with college student drinking, it is important to identify risk and protective factors associated with this behavior (Buscemi, Martens, Murphy, Yurasek, & Smith, 2011). The benefits of physical activity and exercise have been well documented (US Dept. of Health and Human Services; Department of Health and Human Services and Department of Education, 2000) and physical activity is linked to participation in

other positive healthy behaviors, such as recreational exercise and sport participation (Dunn, 2014; Leaver-Dunn, Turner, & Newman, 2007; Pate, Heath, Dowda, & Trost, 1996).

Encouraging students to participate in physical activity has been recommended as a strategy for the avoidance of risk-taking behaviors such as substance use and abuse (Aaron et al., 1995).

Correia, Benson, and Carey (2005) examined the use of physical activity and other creative behaviors to limit substance use over a 28 day period. Participants were randomly assigned to one of three groups: substance use reduction (SR), activity increase (AI), and a control group. Participants in the SR group were instructed to reduce the frequency of their substance use by 50 percent during a 28 day period. Participants in the AI group were instructed to increase the number of days they engaged in physical activity/exercise and creative/artistic activity by 50 percent over the same period. Participants in the AI group self-reported an increase in exercise and creative behaviors and a significant decrease in the frequency of substance use days and in the quantity of alcohol consumed. Participants in the SR group self-reported a decrease in the frequency and quantity of substance use, but also reported a significant decrease in number of exercise days. The results of this study suggest that decreases in substance use can be achieved by increasing engagement in substance-free behaviors.

Not all studies have shown that increased physical activity or exercise lead to students consuming less alcohol. Moore and Werch (2008) explored the relationship between self-reported vigorous exercise frequency and substance use among 391 college freshmen, a population that is considered at greater risk for substance use problems. Results from this study showed that college students who were frequent exercisers reported drinking significantly greater quantities of alcohol and also reported drinking significantly more often than infrequent exercisers did. This research also found that frequent exercisers were less likely to smoke and

stated that college adolescents may have different perceptions of the impact of alcohol consumption and cigarette smoking on their overall health.

Some college programs, like some occupations, may be more likely to contribute to increased drinking. Wolaver (2002) found that students who drink heavily are more likely to choose a social science or business major and less likely to choose education, engineering, and natural science majors, compared to the base category of no/other major. To our knowledge no research has looked at whether or not college program has any effect on alcohol use and how this factor relates to physical activity habits. Therefore, the purpose of this study is to assess the relationship between physical activity habits, alcohol use, and student's age or college program, while also examining gender differences. Increased physical activity may be more likely to have a positive correlation with lower levels of drinking in certain degree programs while other programs may exhibit lower levels of physical activity and higher levels of drinking. With certain majors or colleges having more academically strenuous programs, higher levels of stress could be associated with increased physical activity as increased physical activity is recognized as an intervention that can reduce stress (Adlard & Cotman, 2004). Based on previous research, it was hypothesized that students in the college of business or natural sciences will consume more alcohol.

CHAPTER 2

METHODS

Participants

This study recruited 108 (68 male, 40 female; mean age: 20.22 ±1.7) college students via Kinesiology 101 classes. Inclusion criteria for participation was students between the ages of 18-24 who had consumed alcohol a minimum of one time in the last 30 days as well as participated in moderate or vigorous physical activity in the last 30 days. Completion and return of the primary study survey indicated voluntary consent to participate in this research as approved by the Human Subjects Committee at Southern Illinois University-Carbondale.

Apparatus and Task

Average number of drinks per week was assessed using the Drinking Quantity/Frequency Index, which is part of the Daily Drinking Questionnaire (DDQ) (Collins, Parks & Marlatt, 1985). Moderate and vigorous physical activity levels were each assessed by one single item measure. Weekly moderate physical activity was assessed by asking participants “In the past month, how many days per week did you engage in moderate physical activity for at least 30 minutes?” Weekly vigorous physical activity was assessed by asking participants, “In the past month, how many days per week did you engage in vigorous physical activity for at least 20 minutes?” Response options presented for physical activity were as follows: “0 days per week,” “1-2 days per week,” “3-4 days per week,” or “5+ days per week” for both questions. Participants were also asked their age, gender, year in school, and college program. Surveys were distributed to each student near the end of class. All students were informed that participation was voluntarily, and responses would remain anonymous and confidential.

Students who didn't wish to participate indicated that on the form. Regardless of their response, the students were allowed to leave the classroom once the researcher received the form.

CHAPTER 3

RESULTS

The dependent variables were analyzed using a 2 (gender: male, female) x 10 (colleges enrolled in) ANOVA, using a $p < 0.05$ alpha level to determine significance (Statsmodels version 0.6.1). ANCOVA was also used to examine the effects of age, which was found to be a non-significant factor. Gender was found to be statistically significant for days of vigorous physical activity, $F(9, 1) = 9.24, p = 0.003$, number of days consuming alcohol in last month, $F(9, 1) = 5.20, p = 0.026$, number of drinks consumed in typical weekend, $F(9, 1) = 7.28, p = 0.008$, and number of drinks when at the highest level of consumption, $F(9, 1) = 11.81, p < 0.001$ (Table 1). College enrolled in was found to be significant for drinks consumed in a typical weekend, $F(9, 1) = 2.03, p = 0.043$ (Table 1). T-tests showed that days of moderate physical activity and days of vigorous physical activity were correlated, $r(6) = 0.216, p < 0.05$ (Table 2). T-tests also showed a correlation between number of days students consumed alcohol in the last month and number of drinks at the highest level of consumption $r(37) = 0.441, p < 0.05$ (Table 2). Number of days drank in the last month $r(37) = 0.402, p < 0.05$ and number of drinks at the highest level of consumption $r(62) = 0.77, p < 0.05$ were both found to have a correlation with number of drinks on typical weekend (Table 2). However, no significant correlations were shown to exist between physical activity level and alcohol consumed.

Males were found on average to drink more days of the month (Figure 1), consume more drinks on a typical weekend (Figure 2), and a reported a higher number of drinks when consumption was highest (Figure3) than females. Males also engaged in vigorous physical activity more often than females (Figure 4). The colleges of Education and Human Services, Liberal Arts, and Business students had the largest range of number of days of vigorous physical

activity (Figure 4). It was also found that students that were undecided or in Business had the largest variance of days of moderate physical activity (Figure 5).

Table 1: ANOVA Results

	Days Mod. PA	Days Vig. PA	Days Drank	Drinks Wknd	Drank Most
Gender	0.902701	0.003759*	0.026426*	0.007592*	0.000981*
College	0.439565	0.929321	0.214862	0.043571*	0.134266
Age	0.910616	0.30579	0.908571	0.278856	0.568422

* = $p < .05$

Table 2: Cross Correlations when controlling for effect of gender

R squared	Days Mod. PA	Days Vig. PA	Days Drank	Drinks Wknd	Drank Most
Days Mod. PA	1	0.216*	0.001	0.006	0.009
Days Vig. PA		1	0.081	0.072	0.083
Days Drank			1	0.402*	0.441*
Drinks Wknd				1	0.77*
Drank Most					1

* = $p < .05$

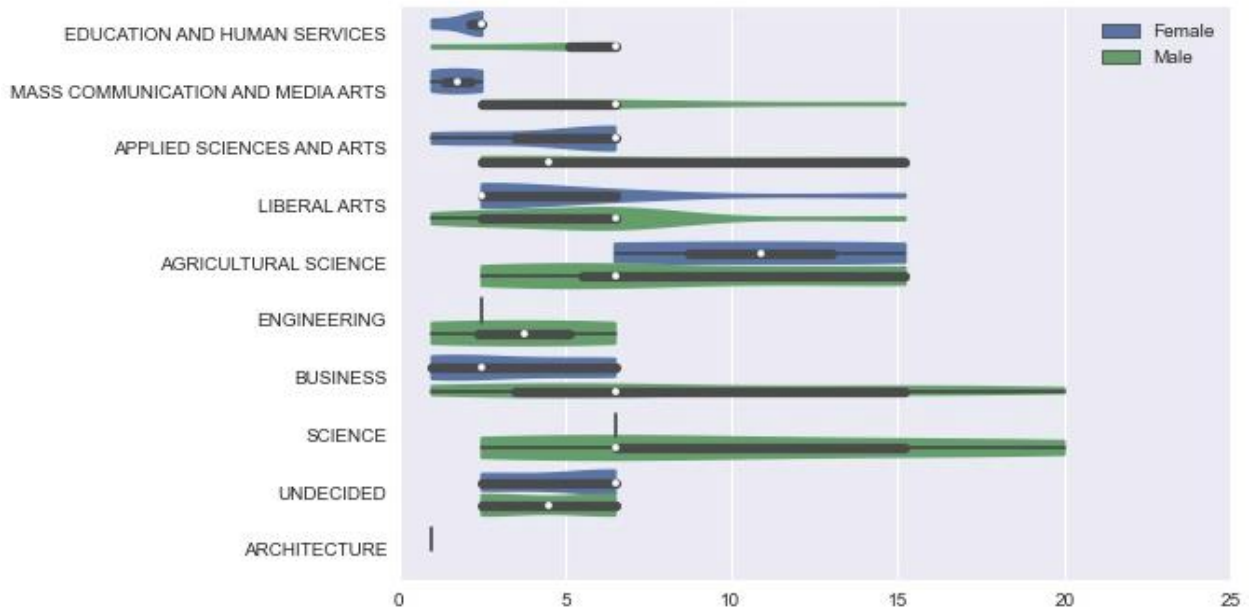


Figure 1 Number of Days Drank in the Past Month (by College and Gender)

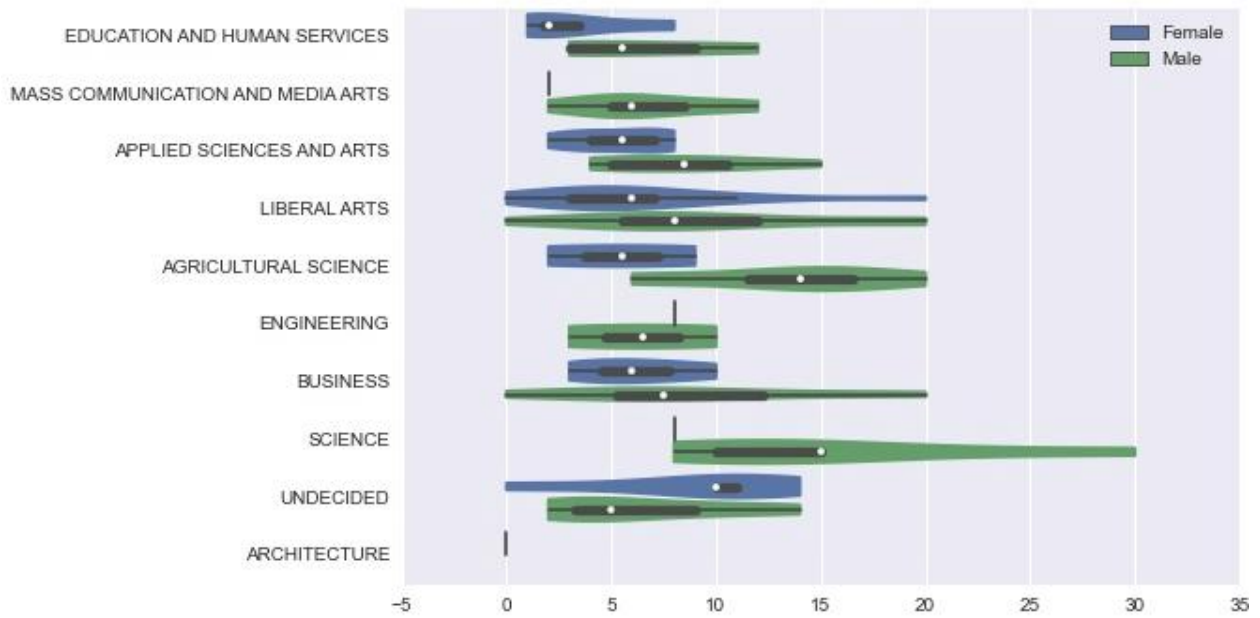


Figure 2 Number of Drinks on a Typical Weekend (by College and Gender)

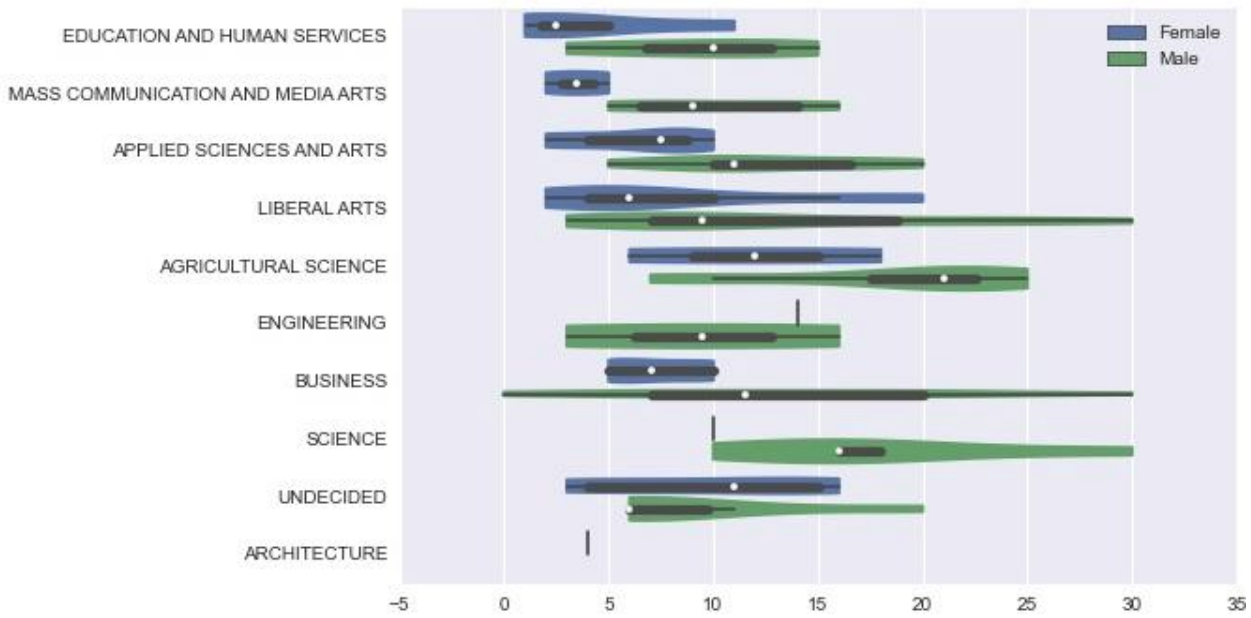


Figure 3 Number of Drinks When Drank The Most (by College and Gender)

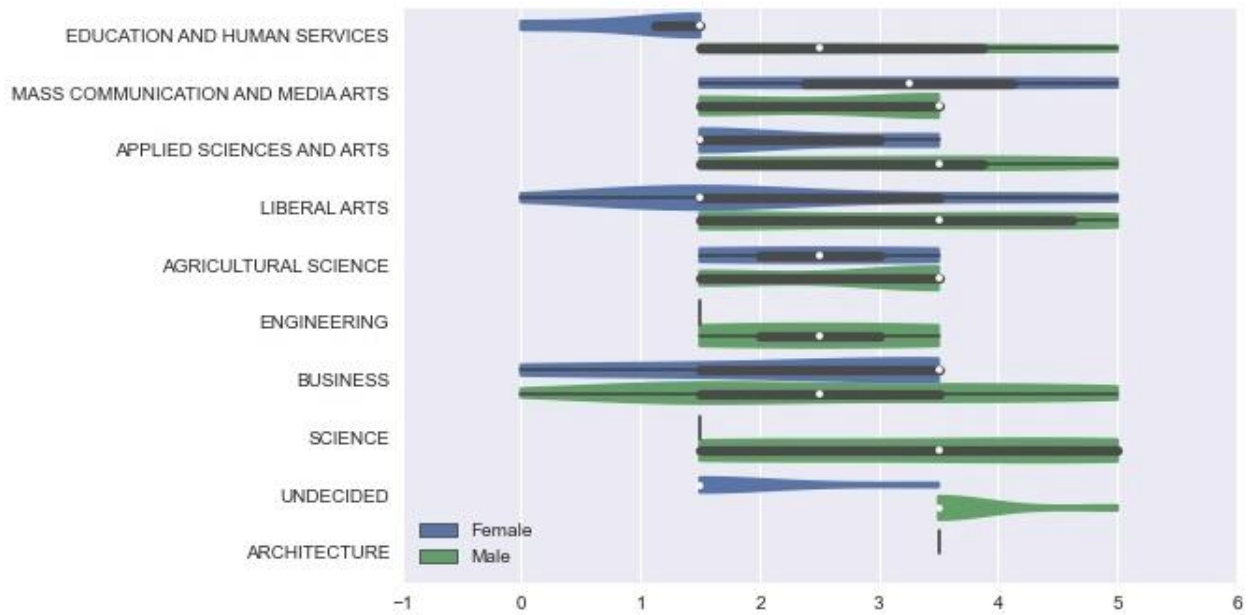


Figure 4 Number of Days of Vigorous Physical Activity (by College and Gender)

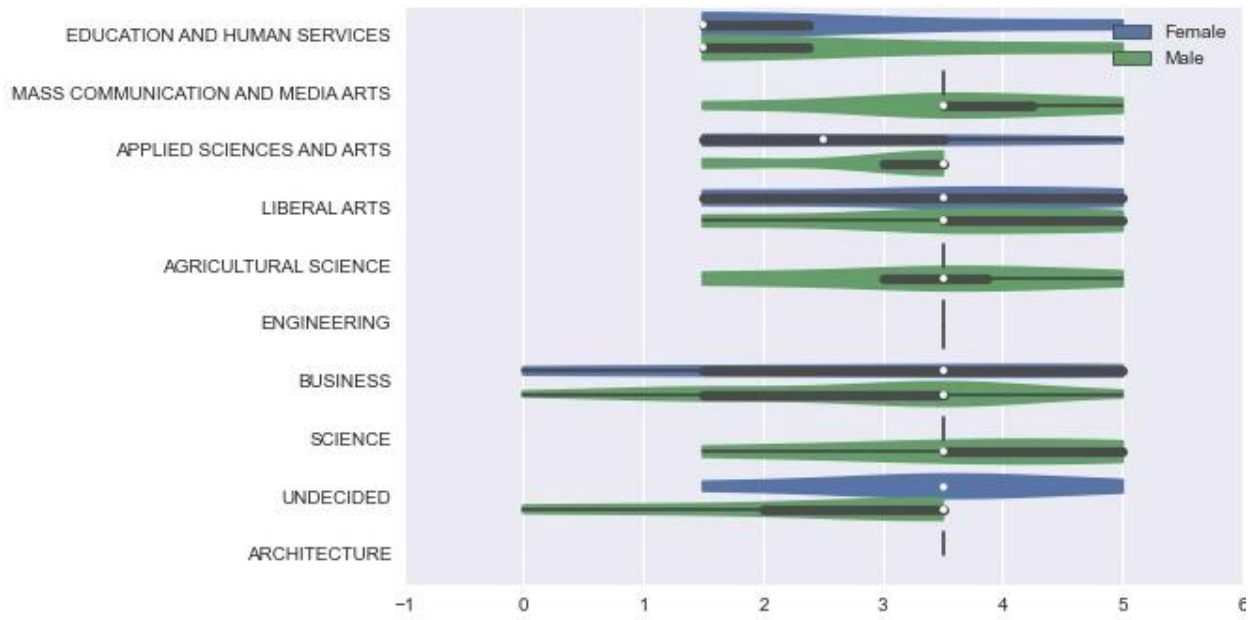


Figure 5 Number of Days of Moderate Physical Activity (by College and Gender)

CHAPTER 4

DISCUSSION

Previous research investigating alcohol use and physical activity has found mixed results as to whether or not the two are related. The purpose of the current study was to assess the relationship between physical activity habits and alcohol use, as well as student age and college enrolled in, while also examining gender differences. The results showed that age was not a statistically significant factor for any of the drinking or physical activity variables. However, the results did show that gender was found to be statistically significant for all three drinking variables as well as days of vigorous physical activity. The results also showed that college was statically significant for drinks consumed on a typical weekend.

When compared to female students, it was found that male students drink more days of the month, consume more drinks on a typical weekend, and have a greater number of drinks when consumption was highest. Males typically weigh more than females and are capable of drinking more alcohol than females. Males also have a social pressure to be able to “hold their alcohol” (Buscemi, Martens, Murphy, Yurasek, & Smith, 2011).

The data also showed that male students were more likely to engage in vigorous physical activity than female students. Males have a large social pressure to remain in a more muscular physical condition while women have social pressure to remain thin. Males carry more muscle mass than a female of the same size, and that, coupled with the social pressure to have a muscular physique, usually results in males being more likely to engage in strength training (Buscemi, Martens, Murphy, Yurasek, & Smith, 2011). With the social pressure to remain thin, females, stereotypically, are more likely to use the cardio equipment as opposed to strength training. Although the genders are much closer in activity level now than 20 years ago, males

still tend to engage in more activity (structured exercise, sporting activities, manual labor jobs, etc.) on a regular basis than females and this stereotype is reflected in our data.

The students in Education and Human Services, Liberal Arts, and Business colleges had the largest range of number of days of vigorous physical activity. The programs of Education and Human Services, Liberal Arts, and Business have larger bodies of students enrolled with a wider range of diverse populations could account for the variance in vigorous physical activity. Fuller, Gonzales, and Rice (2015) found that only 56 percent of on-campus college students were meeting current physical activity recommendations (150 minutes of moderate to vigorous physical activity) set forth by the American College of Sports Medicine. With a larger population of students in these colleges, it may be more likely that they will be more representative of the 44 percent of college students who do not participate in the recommended amount of physical activity.

The data analysis revealed that students in Agricultural Science programs drank the most on average (17 drinks) and most drinks on the weekend (11.9 drinks), which does not support our hypothesis that business or natural science would consume the most alcohol. Students in Agricultural Science are more likely to come from rural backgrounds. Higher levels of alcohol use is more prevalent in rural communities compared to suburban communities (Borders & Booth, 2007). Business students on average consumed 10.72 drinks in the instance when they drank the most in the last 30 days, and 8.33 drinks on an average weekend. Students in Science consumed 14 drinks in the instance when they drank the most and 11.2 drinks on an average weekend. Based on previous research, and the hypothesis of the current study, these higher numbers of drinks consumed were expected. Education and Human Services had the lowest average number of drinks on days when they drank the most (6.88) and drinks on average

weekend (4.88). This could also be attributed to having a larger, more diverse student body. With a larger student body, there is more of a chance that these students will fall into the 55 percent of college students that do not report engaging in binge drinking (Hingson, Zha, & Weitzman, 2009).

Limitations

The current study has a number of limitations that need to be considered. First, participants were voluntarily completing the survey in class and may not complete the questionnaires honestly or accurately. Participants may have perceived their level of physical activity as higher than actuality. Although examples were given for levels of moderate and vigorous physical activity on the questionnaire, some students may see activities such as walking, as a higher-level activity than moderate, so individual interpretation may have been an issue. Alcohol use may also have been perceived as either higher or lower than it was. In an open classroom setting, students may be seeking approval or be under peer pressure of their surrounding peers and answer dishonestly. If surveys were completed in a private setting, answers may have been different (and potentially more accurate). There is no way to test the accuracy of self-reported drinking and physical activity habits. Questionnaires have an inherent risk of being inaccurate since participants are reporting their own answers, and may have poor or incomplete memory of events or external influences that may lead to purposefully or accidentally responding inaccurately (Brewer, Hallman, Fielder & Kipen, 2004).

The number of participants is also a major limitation of the study. A larger sample size would allow for a more accurate sampling of the college-aged population at the university and increased the number of participants in each college program for the data. Larger sample sizes

also typically yield a higher degree of statistical power, which may have helped discern differences between variables.

Another limitation was the survey was completed only once with a limited number of questions both on alcohol use and physical activity. More in-depth questions could have been used to further assess the relationships between physical activity and alcohol consumption, such as questions on the types of physical activity (resistance training, cardiovascular training, sport participation) or questions about types of alcohol (beer, liquor, wine) consumed. Future research could potentially use more in-depth questionnaires to see if a relationship exists between certain types of alcohol consumed and types of physical activity participated in. Answers were also limited on the survey and students couldn't expand upon the predetermined answers. This study also included alcohol users only. It is possible that had the study included non drinkers, that data sample would create a larger range for the variables and could have the potential to show that a relationship existed between physical activity and drinking. If future research also included non-drinkers, the sample size would also increase, which would also be a more accurate representation of the population.

Conclusion

In conclusion, gender was found to be statistically significant for days of vigorous physical activity, number of days consuming alcohol in last month, number of drinks consumed in typical weekend, and number of drinks when at the highest level of consumption. College enrolled in was found to be significant for drinks consumed in a typical weekend. A correlation was found to exist between physical activity variables, as well between alcohol consumption variables. However, no correlations were shown to exist between physical activity level and alcohol consumed. Future research should utilize a larger sample size and more in-depth

questionnaires. By utilizing a larger population with more specific or open-ended questionnaires, researchers would be able to get a better idea of whether or not a relationship exists between certain types of physical activity and alcohol. Finally, including non-drinkers in the sample would also allow for a more accurate portrayal of the student population as not all college students are of age to drink, or have personal reasons for not consuming alcohol whether of age or not.

REFERENCES

- Aaron, D. J., Dearwater, S. R., Anderson, R., Olsen, T., Kriska, A. M., & Laporte, R. E. (1998). Physical activity and the initiation of high risk behaviors in adolescents. *Medicine and Science in Sports and Exercise*, 27(12), 1639-1645.
- Adlard, P.A., & Cotman, C.W. (2004). Voluntary exercise protects against stress-induced diseases in brain-derived neurotrophic factor protein expression. *Neuroscience*, 27(4), 985-992.
- Borders, T.F., & Booth, B.M. (2007). Rural, suburban, and urban variations in alcohol consumption in the united states: Findings from the national epidemiological survey on alcohol and related conditions. *The Journal of Rural Health*, 23(4), 314-321.
- Brewer, N. T., Hallman, W. K., Fielder, N., & Kipen, H. M. (2004). Why do people report better health by phone than by mail? *Medical Care*, 42(9), 875-883.
- Buscemi, J., Martens M. P., Murphy, J.G., Yurasek, A. M., & Smith, A.E. (2011). Moderators of the relationship between physical activity and alcohol consumption in college students. *Journal of American College Health*, 59(6), 503-509.
- Collins, R. L., Parks, G. A., & Marlatt, G.A. (1985). Social determinants of alcohol consumption; The effects of social interaction and model status on the self-administration of alcohol. *Journal of Clinical and Consulting Psychology*, 53, 189-200.
- Correia, C. J., Benson, T., & Carey, K. B. (2005). Decreased substance use following increases in alternative behaviors: A preliminary investigation. *Addictive Behavior*, 30, 19-27.
- Department of Health and Human Services and Department of Education. (2000). *Promoting Better Health for Young People Through Physical Activity and Sports*. DHHS and Department of Education. Washington DC, Government Printing Office.

- Dunn, M.S. (2014). Association between physical activity and substance use behaviors among high school students participating in the 2009 youth risk behavior survey. *Psychological Reports, 114*(3), 675-685.
- Fuller, J., Gonzales, M., & Rice, K. (2015). Physical activity levels among on campus and online college students. *International Journal of Exercise Science, 8*(3), Article 21.
- Hingson, R., Zha, W., & Weitzman, E. R. (2009). Magnitude of alcohol-related mortality and morbidity among U.S. college students ages 18-24: changes from 1999-2005. *Journal of Studies on Alcohol and Drugs, 16*, 12-20.
- Johnston, L. D., O'Malley, P. M., & Bachman, J. G. (1998). *National survey results on drug use from monitoring the future study, 1975-1997: Volume II*. NIH publication No. 98-4346, Washington DC, Government Printing Office.
- Leaver-Dunn, D., Turner, L., & Newman, B. M. (2007). Influence of sports programs and club activities on alcohol intentions and behaviors among adolescents. *Journal of Alcohol and Drug Education, 51*, 57-72.
- Moore, M., J., & Werch, C. (2008). Relationship between vigorous exercise frequency and substance use among first-year drinking college students. *Journal of American College Health, 56*(6), 686-690.
- Pascarella, E. T., Goodman, K. M., Seifert, T. A., Tagliapietra-Nicoli, G., & Whitt, E. J. (2007). College student binge drinking and academic achievement: A longitudinal replication and extension. *Journal of College Student Development, 48*(6), 715-727.
- Pate, R. R., Heath, G. W., Dowda, M., & Trost, S. G. (1996). Association between physical activity and other health behaviors in a representative sample of U.S. adolescents. *American Journal of Public Health, 86*, 1577-1581.

Wechsler, H., Lee, J. E., Kuo, M., Seibring, M., Nelson, T. F., & Lee, H. (2002). Trends in college Binge Drinking during a period of increased prevention efforts. *Journal of American College Health*, 50(5), 203-217.

Wolaver, A. M., (2002). Effects of heavy drinking in college on study effort, grade point average, and major choice. *Contemporary Economic Policy*, 20(4), 415-428.

APPENDIX

STANDARD DRINK CONVERSION

When asked how much you drink in the following questions use this chart.

ONE STANDARD DRINK IS EQUAL TO:

Standard American BEER 12 oz. Can, Bottle or Glass

(3-5% alcohol)

Microbrew or European BEER 1/2 of a 12 oz. Can or Bottle

(8%-12% alcohol)

WINE (12 – 17% alcohol) 4 oz. Glass

WINE Cooler 10 oz. Bottle

HARD LIQUOR 1-1/2 oz. or One Standard Shot

(80-proof, 40% alcohol)

HARD LIQUOR 1 oz.

(100-proof, 50% alcohol)

WINE: 1 Bottle

25 oz. (12 – 17% alcohol) = 5 standard drinks

40 oz. (12 – 17% alcohol) = 8 standard drinks

HARD LIQUOR: 1 Bottle

12 oz. = 8 standard drinks

25 oz. = 17 standard drinks

40 oz. = 27 standard drink

I choose to not participate. _____

Age: _____

Gender: (circle one) Male Female

Year in School: (circle one)

Freshman Sophomore Junior Senior

Degree Program: _____

In the past month, how many days per week did you engage in moderate physical activity for at least 30 minutes? (ie, lower intensity exercise such as walking at a comfortable pace). Circle one.

0 days per week 1-2 days per week 3-4 days per week 5+ days per week

In the past month, how many days per week did you engage in vigorous physical activity for at least 20 minutes? (ie, intense physical activity associated with perspiration and heavy breathing). Circle one.

0 days per week 1-2 days per week 3-4 days per week 5+ days per week

Drinking Quantity/Frequency Index (Cahallan's Q/F Index)

1. How often did you drink during the last *month*? (circle one)

- | | |
|--------------------------------|--------------------------------|
| a. I did not drink at all. | e. Three to four times a week. |
| b. About once a month. | f. Nearly every day. |
| c. Two to three times a month. | g. Once a day or more. |
| d. Once or twice a week. | |

2. Think of a typical weekend evening (Friday or Saturday) during the last *month*.. How much did you drink on that evening? (check one)

- | | | |
|-----------|-----------|--------------|
| 0 drinks | 11 drinks | 22 drinks |
| 1 drinks | 12 drinks | 23 drinks |
| 2 drinks | 13 drinks | 24 drinks |
| 3 drinks | 14 drinks | 25 drinks |
| 4 drinks | 15 drinks | 26 drinks |
| 5 drinks | 16 drinks | 27 drinks |
| 6 drinks | 17 drinks | 28 drinks |
| 7 drinks | 18 drinks | 29 drinks |
| 8 drinks | 19 drinks | 30 drinks |
| 9 drinks | 20 drinks | More than 30 |
| 10 drinks | 21 drinks | |

3. Think of the occasion (any day of the week) you drank the most during the last *month*. How much did you drink? (check one)

- | | | |
|-----------|-----------|--------------|
| 0 drinks | 11 drinks | 22 drinks |
| 1 drinks | 12 drinks | 23 drinks |
| 2 drinks | 13 drinks | 24 drinks |
| 3 drinks | 14 drinks | 25 drinks |
| 4 drinks | 15 drinks | 26 drinks |
| 5 drinks | 16 drinks | 27 drinks |
| 6 drinks | 17 drinks | 28 drinks |
| 7 drinks | 18 drinks | 29 drinks |
| 8 drinks | 19 drinks | 30 drinks |
| 9 drinks | 20 drinks | More than 30 |
| 10 drinks | 21 drinks | |

VITA

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