Under the Influence

Honors Program Senior Capstone

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April 2018

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ACKNOWLEDGEMENTS

It is with great appreciation that I acknowledge Dr. William Zywiak and Dr. Alan Olinsky for their involvement throughout and their efforts in helping me with the completion of this capstone. They both contributed their time, resources, and knowledge to this research project. Their support has meant a great deal to me. Without them, this project would not have met and surpassed its goals. I also must acknowledge Dr. McKay-Nesbitt, director of the Honors Program at Bryant University, for pushing those within the Honors program to strive for their fullest potential. I am wholeheartedly thankful for the motivation, resources and direction given to the Honors students throughout the capstone process which is a project I took pride in completing. Finally, I would like to acknowledge my family and friends who have shown their support throughout my collegiate career.

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<u>ABSTRACT</u>

The purpose of this Honors Capstone entitled *Under the Influence* is to assess the validity of claims concerning the possible influence of roommates on one another, concerning alcohol on college campuses. This will be done by examining data collected in a prior study conducted over a two-year period. This analysis will focus on how alcohol consumption changes in correlation with the personality factors of roommates over an extended period of time.

This secondary analysis of de-identified data will focus on primary and secondary sub-questions. The primary question that will be addressed with the data set collected from the University of Rhode Island study is: "Do roommates have any statistically significant effects upon one another in terms of development of habits, particularly those concerning drinking?" The first component of this thesis that this research will delve into is, "Will one's personality traits enhance one's susceptibleness to one's roommate?" After identifying possible personality traits that correlate to the increased influence in drinking, the statistical significance amongst the genders represented in this study will be examined, uncovering whether men or women are more susceptible to their roommates. Finally, the factors that may have led to altered drinking will be analyzed. While looking to see if lineage or factors such as residency are of any significance, this research will compare these factors to their roommates and see if there are any changes based upon these precursors.

Keywords: Influence, correlation, personality factors, analysis

Scope of Project & Focus

The interest that I have expressed in this area is directly correlated to observing and talking with people who believe that they have been altered by living with others who have come into contact with drinking. After looking into the validity of these claims, I believe that this project would be an interesting endeavor to undertake. Individuals have numerous misconceptions about drinking and the genetic and environmental components that make one susceptible to excessive drinking. Yet, individuals seem to glance over the fact that constant exposure to anything may wear down and weaken an individual until conscious or subconscious adoption. So, this modem has two ways to traverse. Drinkers could bestow some of their habits into their roommates and non-drinkers could cause their roommates to alter their regiment.

While performing a traditional research project with a focus on quantitative analysis, I understand that there are some qualitative factors and innate psychological principles that I cannot account for while computing these statistics that I will reference. There may be heavier drinking on the weekends and more accurate data on those days considering that is when most free time for college students is on Friday and Saturday. The timing of the collection of the data used could skew the results recorded on the collection day due to the inability of some individuals to properly recount the amount of drinks taken during previous days.

There are also psychological components to this Honors Capstone: social contagion theory and peer pressure. Social contagion theory is a theory of collective behavior which explains that the crowd can cause a hypnotic impact on individuals. Peer pressure is the influence from members of one's peer group to act or think in a certain way, producing conformity and inducing a social hierarchy. These non-empirical factors may be difficult to account for but were mentioned in the literature reviews of experiments and papers in this field. This is an area of interest for individuals besides myself due to the dearth of availability of truly reliable data since people do not wish to be judged by or wholeheartedly disclose their habits.

Research Methodology

The entirety of my project will be founded upon secondary data analysis since I will be working with previously collected data. Some individuals are genetically or psychologically predisposed to alcoholism and others can metabolize alcohol more quickly than the average person. However, individuals also believe to have been nurtured into this lifestyle. This project could bolster the proposition that both exposure to others and one's environment and biological predispositions are complementary forces that can both serve as instillers for both positive and negative traits. Concurrently, it serves to examine the true psychological hardiness of the University of Rhode Island students in this study. College students are subjected to large quantities of stress and work while transitioning from adolescence into adulthood, compounding all of the effects of maturing in a few years. This, in unison with the factors being studied, could serve as instillers of change in one's character when exposed to one's roommate who may have already given into these stressors or uses it as a relaxation or stress management instrument.

Hypotheses

Before delving into the analyses for this research, hypotheses were formulated about how the personality factor could drive the changes in drinking behavior amongst roommates. Men and women will have some variations in personality traits that correlate to narcissism. These narcissistic personalities interacting with one another will result in individuals both increasing their drinking over the course of their time together. The more narcissistic individual is believed to be driving the change in drinking within the room. This individual is inciting an effect where the results are either polarizing the other roommate to not join in the drinking festivities and lower their alcohol consumption or these two likeminded self-oriented individuals synchronize their drinking schedules and increase their consumption of alcohol. This is also hypothesized to be applicable to the relatively more extroverted person within the room. They are more socially outgoing and have qualities that allow their personalities to rub off onto individuals, continuing the roommate contagion effect being analyzed.

Those who are not from within the state will increase their drinking more over time due to time spent away from home and on campus. The culture condoned by today's society is for men to drink more than women, leading those with more passive personality traits to conform to their roommates, particularly amongst men. The higher frequency drinker is driving the dramatic change within the roommate pairings. Those who are narcissistic are unwilling to change and therefore are driving this change within the room. Therefore, the narcissist is the higher frequency drinker and has neurotic character traits predictive of this and their possibly addictive personalities. These contagion effects can yield valuable insight into how drinking habits can pass from one person to another and how personalities interact with one another in a room.

Statistical Approach

The roommate drinking contagion was operationalized in two ways. In both manners, the data was constricted to the first scheduled day of the semester until the day before the final regularly scheduled day of classes. In the first manner, drinking during the Freshman Fall semester across all days was used to obtain a correlation. In the second manner, a regression line was obtained for each student. This included a slope and an intercept for each student. These statistical variables were utilized to determine how personality variables and other variables were involved with the roommate contagion effect. Statistical significance values were also calculated to confirm the validity of the values calculated for each of the personality and drinking variables.

<u>LITERATURE REVIEW</u>

Introduction

Alcohol consumption at a collegiate level is considered a major topic of discussion and research throughout the United States due to the possible mental and physical development ramifications it may have on the future of the nation. The major concerns about drinking during adolescence are concerning the alteration of the chemical make-up of the individuals consuming large quantities of alcohol before the completion of their development and the development of a dependency upon this substance leading to addiction and the downward spiral it brings. Throughout the past few decades, individuals have noticed a steady increase in high school and college drinking.

So, as a result, massive data collection and research endeavors were undertaken to delve into the rationality for these decisions and the possible changing nature of these educational institutions. After the data collection phase of this research is completed, individuals sifted through it and analyzed all of the variables they believed correlated with various drinking components to see if there were any statistically significant correlations. However, once individuals have finished utilizing this data, it either is not used again or given to individuals to be employed in a meta-analysis with other similar data sets or a secondary analysis to observe any correlations not listed or thought of in the preliminary analyses. My capstone will be conducting such secondary analyses to examine any possible correlations concerning alcohol consumption amongst roommates and any possible sub-divisions of the population that I will be examining.

History/Prior Studies

The literature concerning alcohol consumption amongst individuals in a college setting is generally extensive but most sources do not directly address the issue that I will conduct my research into. The studies and research done in these areas can be categorized into five segments: trials concerning feedback, surveys about alcohol consumption aiming to address its misconceptions and the conceptions of the student body, health and behavioral consequences of drinking, consumption patterns and the motivation to drink throughout college, and the connection between drinking in high school and college, the bridging of the two.

The following paper presents research concerning a secondary analyses of a pre-existing data. The original database that housed this data functioned as part of a randomized trial investigating student drinking habits and telephone call intervention. This trial was intended to test whether monthly telephone calls during the academic year could reduce drinking amongst students. The trial went through four semesters, the equivalent of two academic years. The intervention was intended to encourage students to curtail drinking so they can improve their GPA. The original study was conducted at the University of Rhode Island. A total of 374 First Offenders of the university's Alcohol and Drug Policy volunteered for and participated in this study. Participants in the trial included 2 seniors, 15 juniors, 83 sophomores, and 274 freshmen. At the conclusion of this study, stronger evidence was obtained for changes in academic outcomes, rather than changes to drinking outcomes. The intervention calls were deemed to have a positive impact on raising GPA with this particular group of university students. A secondary analysis was then developed to evaluate the extent to which roommates' drinking is correlated, and what variables are related to roommates' drinking in a similar or dissimilar fashion.

Review

Studies such as the primary longitudinal study conducted by the Center of Alcohol Studies have provided me with the fundamentals for the collection of data, its analysis, and its application to real world conditions amidst the ever- changing social climate and tolerance atmosphere. Yet, even though these studies addressed a wide range of questions surrounding alcoholism and its spreading, some studies uncovered tackled issues closely tied to the issues that I will be addressing throughout my analysis.

According to Bridgette Bewick's study entitled *Changes in undergraduate student alcohol consumption as they progress through university*, "Heavy alcohol intake amongst the student population has implications for the individual, educational institutions, and wider society. Students have been reported to drink at higher levels than non-student peers, making this an issue of public health concern given the negative social and health consequences of heavy intake and the link with other unhealthy behaviors…"

This study addresses the disparity in university related alcoholism studies between the United Kingdom and the United States of America. The consumption of alcohol by college students in the United States has been extensively studied and, based upon the plethora of studies, the community of researchers in the field generally agree that, even though the general trajectory of individuals differ throughout their time in college or at university, the overall trend in consumption is one that dictates an increase from high school to college or university, followed by a significant decline post completion of education.

With most alcohol consumption studies conducted, according to the literature, researchers such as those in the aforementioned study must take into account various risk factors that individuals subject themselves to upon engaging in this type of activity. According to Klein's study surnamed *Changes in college students' use and abuse of alcohol, and in their attitudes towards drinking over the course of their college years*, there are direct correlations between the levels of alcohol intake and the prevalence of risky behaviors. These behaviors include but are not limited to unsafe sexual activity, injury heightening behavior, and damage to one's property, one's person in the form of violence resulting from conflict, and illicit behavior resulting from one's compromised judgment.

The increase in frequency of injury and assault correspond to an increase in the strain placed upon emergency services and care within public institutions. Erstwhile, these links between alcohol consumption and hospital admissions have been well established but seem logical due to the possible immaturity of those consuming the beverages and either not recognizing their limits upon consumption of alcohol or not properly recalling their consumed drinks. Heavy alcohol intake has also been linked directly to depression and certain types of liver damage. Throughout almost all of the locations where these extensive studies had taken place, those that investigated alcohol use and capital expenditures forfeited due to this misusage recorded astonishing results. Cities that witnesses this extensive increase in alcohol misuse saw their expenses rise millions of pounds per year in the United Kingdom and millions of dollars within the United States, the majority of which was allocated towards policing, repairing damages, and caring for those who required alcohol related treatments for their ailments.

This connection was prevalent in Bridgette Bewick's study referenced in the beginning of the literature review. Yet, the investigation that group of individuals was conducting was focused on examining the patterns of alcohol consumption of two cohorts of students over the course of their undergraduate education. They desired to garner information on the obstacles individuals would have to avoid in order to prevent heavy alcohol consumption long term while witnessing the general trend of alcohol consumption throughout one's university education.

Another startling revelation that came across during the literature review was the stark difference in drinking amongst college students and non-college students in the same age pool. It is generally accepted within this field of researchers that those enrolled in college have a higher tendency to drink than those not enrolled in college. This is due in part to various factors and preconceived notions. One notion that individuals have popularized in the media and entertainment industries is a drinking culture on college campuses. Those who are members of organizations on campus such as Greek Life have witnessed levels of backlash by the media due to the exposure of hazing and their higher levels of alcohol consumption than the non-Greek counterparts.

Researchers have concluded that individuals succumb to the pressures of drinking amidst this well-established group and desire to belong and be accepted by their peers. So, they continue the cycle and perpetuate the culture and stereotypes associated with their organization. Women are exposed to these forces while faced with other rationale for drinking. LaBrie et al. discuss women's reasons for drinking, highlighting societal and relational pressures in concert with upward mobility as contributing factors to alcohol use. Another influence taken into account is the quantity of additional stressors college students face when compared to non-college students of the same age. Those enrolled in college worry about repaying student loans, work upon graduation, and maintaining their lifestyles they have come accustomed to throughout their education with minimal support. Whereas those who are not enrolled in college already have a well-established routine they can perpetuate throughout their careers and have already started saving up funds for their future. Whether those funds are comparable to those earned by a college graduate is something that varies on a per person basis. Yet, they do not have to worry about repaying money because they have already attained the skills vital to their role and can operate under their own supervision. The level of responsibility they employ to take care of themselves is something that generally varies as one peruses throughout this entire population but their goals are self-appointed and their lives are less stressful than their seemingly more educated counterparts.

Those in college and drowning in a sea of debt may look to maximize their time spent enjoying college and the unique dynamic it poses by seeking to disconnect to reality. According to Baer, "a general dimension described as 'impulsive expression/sensation seeking' was associated with drinking more frequently, in greater quantities and with more negative consequences among college students." Rebellious, impulsive, extraverted individuals within the first six weeks of college who succumb to this mindset are especially vulnerable to acquiring these habits and compounding their problems. This inhibition may relate to increased drinking rates. However, due to the restrictions of the study, it is not valid to make the assumption that this would lead to the development of an alcohol dependency due to the varying contributing factors not controlled for.

After thoroughly examining the studies published by my predecessors, I noticed that there were some general limitations and issues that they encountered that are worth notating.

First and foremost, data collection and credibility was viewed to be a major issue no matter where I viewed my literature. Researchers who placed forth quandaries concerning drinks consumed on a given night could not fully trust the results given to them by the participants in the study due to the reliability of their memories. Individuals were asked to give the amount of drinks they consumed on one night in most studies and had to estimate the amount they drank considering they either could not remember or had to convert their homemade cocktails into a standard unit for a drink and miscalculated, weakening the credibility of the data and the strength of the analyses conducted throughout the study.

However, due to the magnitude of these studies, funding was considered a major limitation for replication and completion of the desired analyses. Some studies were conducted in state universities that house thousands of people. Being able to find benefactors willing to even fund the pilot study must have been difficult enough, let alone finding someone else willing to replicate it. These studies are primarily done once and only the methodology is checked and proofread. These quantitative studies have proven to be the hinge on the development and understanding of alcohol treatment and consumption in collegiate settings and the world as it is commonly understood and known.

Upon understanding the rationale for drinking in college and its general downward trend throughout one's attendance in college, biostatisticians, psychologists, and other researchers have devised terminology and techniques that have been called upon by the media but have been misconstrued repeatedly. Individuals hear the word regression but believe it to be the downward slope of their fate as they proceed through life. That may be true for some but in the context of these studies it is an approach for modeling the relationship between a scalar dependent variable y and one or more explanatory variables labeled X. Individuals become frightened when they hear survival analysis but it merely a set of methods for analyzing data where the outcome variable is the time until the occurrence of an event of relevance. This changes depending upon the nature of the study but can be anything from a marriage to someone's death. Psychologists use social contagion theory to account for the spreading of alcoholic tendencies but people associate it with the spreading of a virus or ailment. This has some truth to it but contagion theory actually is a theory of collective behavior which explains that the crowd can cause a hypnotic impact on individuals.

Conclusion

      The literature and intertwined studies for the possible convergence of roommate drinking in college or university is rather extensive and informative. While providing me with an understanding of this field of study, the work of previous researchers has also informed me of certain methodologies that I could employ throughout my work. For instance, the utilization of longitudinal analysis after conversion of entries into a statistical software readable file is something that I will have to do in order to complete my project. Another significant factor that I had uncovered is the extensive college alcohol studies within the United States. Over the past few decades, research into alcohol consumption and the ramifications older adolescents, college students, face has skyrocketed. Every college culture varies on a per campus basis, but some commonalities exist within certain regions of the country.

Preparation of Data

In order to perform the analyses necessary for the research, the drinking data needed to be prepared into a usable format. The original data used was not intended to be analyzed in this manner and had to be converted into a functional data construct. Originally, the data was stored in Filemaker documents separated into two halves. The first half of the data was the first half of the participant's time within the study. The second Filemaker file contained the remaining drinking data from every participant still enrolled in the study. This data was not started on a calendar basis but on the date the person enrolled into the trial. So, all of the drinking data needed to be calendar aligned and sorted by identifier in order to pull the drinking data needed for the pairings over the allotted period of time being analyzed.

After going sheet by sheet in both of these Filemaker files and exporting all of this into excel, some issues arose. Due to the original structure of the database, excel could not properly import some of the participants needed for the analyses and they had to be manually entered into the system and duplicates had to be corrected. Due to the batches of individuals that enrolled into the study slightly later than all of the other participants, some of their drinking values had to pushed backwards to fall in line with the new calendar format for the data. After converting all non-date values from characters to numeric values and placing weekly breaks in the 2 years of data, all values and identifiers were checked against the original Filemaker documents and all personality and historical factors were paired with the usernames and drinking data placed within the new database. This process was completed over the course of two weeks.

Roommate Correlation

Since the correlation yielded one dependent variable per room and the regression lines yielded four dependent variables per room, different approaches were needed. For the latter, an initial descriptive analyses was conducted, consisting of a scatter plot of slope x intercept for all 48 relevant participants (See Figure 1). 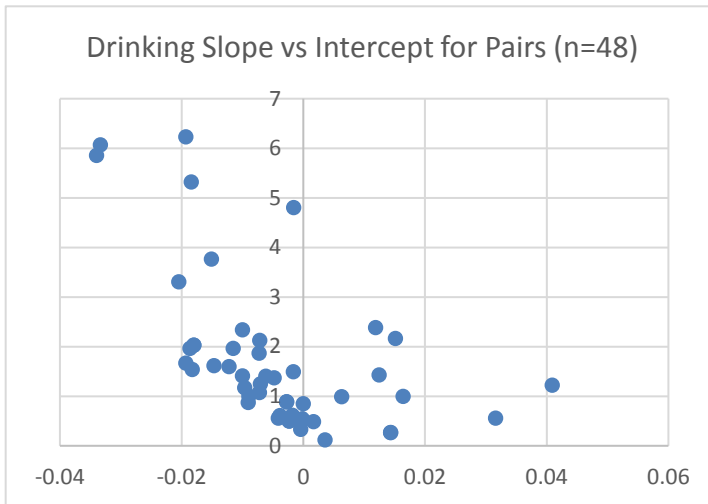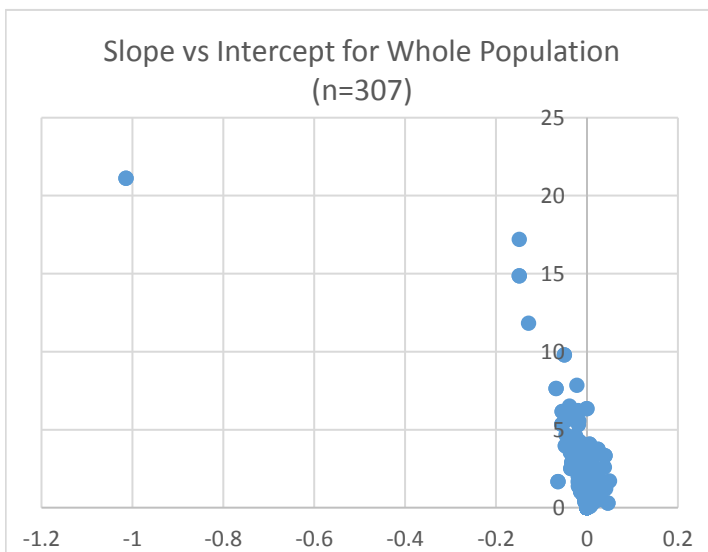This figure illustrates several important findings. Most of the students were in a cluster depicted in Figure 2. There were also several notable outliers. Next for this analysis, separate rooms were examined using the same scatterplot. This revealed that many roommates were both in the main cluster. Other roommates either consisted of convergent drinking or leap frog drinking. It seems that the main cluster was affected by campus-wide influences, and that the idiosyncratic pairs were affected by roommate dynamics or individual risks/protections. The idiosyncratic rooms consisted of these mutually exclusive categories: converging rooms, diverging rooms, both decreasing, both increasing, and leap frogger rooms with one roommate increasing or decreasing and the other roommate remaining stable.

Figure 1

Figure 2

Personality Factors

The thorough examination of these types of rooms and examining individual characteristics was performed through the use of correlation matrices, significance testing, the calculation of roommate differentials for selected personality factors, and regression. It was revealed that residency, extroversion, neuroticism, agreeableness, and conscientiousness may have played a role in changes in drinking across the semester. Gender is included as a control variable. Given sample size considerations, and to have adequate statistical power, the analyses were advanced by taking the other freshman students into consideration when performing these analyses. A random half was taken since students with a randomization date between March 7th and May were not taken since their September drinking data needed for the research was not present. Parallel analyses for both roommates who declared or did not declare their major was performed while all correlations were tested for significance.

Results

After having performed the necessary analyses to comb through the data, these were the findings. Extroverted individuals did drink more than introverted individuals on a daily basis. However, this difference in drinking was not statistically significant and is therefore negligible. Neuroticism and extroversion are correlated with the roommate drinking correlation. Specifically, the difference between neuroticism scores were correlated with the drinking correlation for that specific room [r(22) = -.41, p = .044]. There was also a trend for the difference in extroversion and the correlation with the drinking correlation [r(22) = -.39, p = .058]. Roommates that had a lower differentiation in their neuroticism score had similar drinking habits, as indicated by the prior findings. This holds true for extroversion as well. The coefficient for this correlation was found to be .007. In order to confirm homogeneity in the data used, a Levene's test was performed. The p-value calculated was 1.12E-22, meaning that the null hypothesis can be rejected and the means are statistically different as it fulfills the homogeneity of variances assumption.

Openness and agreeableness have a strong correlation with one another. This is also true with conscientiousness and agreeableness. However, neuroticism and extroversion do have minimal overlap as showcased by the partial correlation calculated. This value was calculated to be -.381. Logically, there is some relationship between these two personality traits. It was also discovered that individuals with similar amounts of these selected personality traits result in similar drinking habits over the exposure period. The magnitude of these variables does not matter. Rather, their likeness dictates the changes in drinking.

APPENDIX

		Corr	opedif	condif	neudif	agrdif	extdif	narcdif
					Correlations			
Corr	Pearson Correlation	1	-.008	-.112	-.414*	.059	-.392	-.208
	Sig. (2-tailed)		.971	.603	.044	.785	.058	.340
	N	24	24	24	24	24	24	23
opedif	Pearson Correlation	-.008	1	.200	.235	.246	.092	-.193
	Sig. (2-tailed)	.971		.177	.111	.096	.539	.204
	N	24	47	47	47	47	47	45
condif	Pearson Correlation	-.112	.200	1	.111	.617**	-.098	.088
	Sig. (2-tailed)	.603	.177		.458	.000	.512	.565
	N	24	47	47	47	47	47	45
neudif	Pearson Correlation	-.414*	.235	.111	1	-.198	.128	.399**
	Sig. (2-tailed)	.044	.111	.458		.183	.391	.007
	N	24	47	47	47	47	47	45
agrdif	Pearson Correlation	.059	.246	.617**	-.198	1	-.159	-.133
	Sig. (2-tailed)	.785	.096	.000	.183		.287	.382
	N	24	47	47	47	47	47	45
extdif	Pearson Correlation	-.392	.092	-.098	.128	-.159	1	-.020
	Sig. (2-tailed)	.058	.539	.512	.391	.287		.898
	N	24	47	47	47	47	47	45
narcdif	Pearson Correlation	-.208	-.193	.088	.399**	-.133	-.020	1
	Sig. (2-tailed)	.340	.204	.565	.007	.382	.898	
	N	23	45	45	45	45	45	45

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Partial Correlations

Correlations

Control Variables			Corr	neudif
extdif	Corr	Correlation	1.000	-.381
		Significance (2-tailed)	.	.073
		df	0	21
	neudif	Correlation	-.381	1.000
		Significance (2-tailed)	.073	.
		df	21	0

Correlations

Control Variables			Corr	extdif
neudif	Corr	Correlation	1.000	-.356
		Significance (2-tailed)	.	.095
		df	0	21
	extdif	Correlation	-.356	1.000
		Significance (2-tailed)	.095	.
		df	21	0

Neuroticism slope $r = .045$

Extroversion slope $r = .007$

Descriptive Analyses of Roommate Pairs (n=48)	
Dichotomous Variables	**Percent of Pairs**
Freshman	100%
Women	43%
In-State	35%
Declared Major	78%

Descriptive Statistics for Roommate Pairs (n=48)		
Variable	**Mean**	**Standard Deviation**
Drinks per Day	1.68	3.43
Semester Intercept	1.76	1.55
Drinking Slope	-.0044	.0143
Drinking Correlation	.28	.20
Neuroticism	2.15	.70
Narcissism	1.82	.52
Agreeableness	4.02	.44
Extroversion	3.47	.60
Conscientiousness	3.96	.43
Openness	3.15	.97

Descriptive Statistics for Whole Population (n=374)		
Variable	**Mean**	**Standard Deviation**
Drinks Per Day	1.69	3.51
Semester Intercept	2.34	2.71
Drinking Slope	-0.02	0.09
Neuroticism	2.29	0.58
Narcissism	1.99	0.52
Agreeableness	4.01	0.42
Extraversion	3.47	0.54
Conscientiousness	3.98	0.44
Openness	3.51	0.49

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