ABSTRACT

A Multiple Variable Health Assessment and Descriptive Study Among College Students

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A descriptive study was performed to investigate specific health variables (exercise, stress, alcohol use, and self-esteem) among a college population ($n = 74$). Study participants completed four online surveys (Core Alcohol and Drug Survey, Perceived Stress Scale, Rosenberg Self-Esteem Scale, and International Physical Activity Questionnaire) that addressed each health variable; however, only the Perceived Stress Scale, the Rosenberg Self-Esteem Scale, and International Physical Activity Questionnaire were utilized in data analysis. Three ANOVAs were conducted to test for mean differences in gender for each health variable (exercise, stress, and self-esteem), Pearson correlations were computed to test for significant associations among the same three health variables, and a post hoc analysis was performed to further test for gender differences in slopes for the relationship between stress and self-esteem. A statistically significant negative correlation between stress and self-esteem for total group, females, and males was detected. A lack of significant associations was discovered between exercise and stress and exercise and self-esteem. No other significant scores were detected, but important trends relating to other current literature were revealed. This

study offers support for other previous findings on stress and self-esteem associations and

provokes questions for future research studies regarding health variables among the

college population.

A Multiple Variable Health Assessment and Descriptive Study Among College Students

by

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A Thesis

Approved by the Department of Health, Human Performance, and Recreation

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CHAPTER ONE

Introduction

This chapter discusses pertinent background information that will be further expounded on in the literature review in Chapter 2. The problem statement and purpose of this study are discussed as well. Following that discussion, the study hypotheses are stated, the study's terms are defined, and the study's delimitations and limitations are stated.

Background Information

College students often neglect to engage in several important health promotion behaviors. Prominent and specific health variables faced by college students include alcohol abuse, physical inactivity, stress, low self-esteem, and poor quality of life (Racette, Deusinger, Strube, Highstein, & Deusinger, 2008; "College," 2005; Misra & McKean, 2000; Mandell, 1992; Hickerson & Beggs, 2007; Cecen, 2008). For example, researchers have recently found that 40 to 50% of college students do not engage in regular exercise (Keating, Guan, Pinero, & Bridges, 2005). After college, rates of regular exercise decrease further with only 25% of all adults meeting exercise recommendations (Racette et al., 2008). To achieve the recommendations for exercise, adults must either participate in moderate activities at least five times a week for 30 minutes each session or participate in vigorous activities at least three times a week for 20 minutes each session (Centers for Disease Control and Prevention, 2001). An interesting trend is that high exercise behaviors have been associated with high intake of alcohol (Moore & Werch,

2008). Overall, men exercise more often than women, and men choose to exercise based on different criteria than women (Kilpatrick, Hebert, & Bartholomew, 2005; Buckworth & Nigg, 2004).

High risk behaviors are also a problem on college campuses. Alcohol is the number one abused substance on campuses in the United States. This abuse leads to many dangerous situations during the college years. Some students experience disturbances in their personal or academic lives because of an alcohol-related incident. Substance misuse problems can escalate even further to violence and death ("College," 2005). Increased alcohol intake is often connected to poor stress management actions, low self-esteem levels, and poor physical health (Britton, 2004; Glindemann, Geller, & Fortney, 1999; Economos, Hildebrandt, & Hyatt, 2008). College-aged men more often drink in excess than college-aged women with the reasons behind choosing to drink or choosing to abstain from alcohol varying based on gender (Robinson, 1998; Piane & Safer, 2008; Economos et al., 2008; Bernards, Graham, Kuendig, Hettige, & Obot, 2009).

Additionally, stress is also a major source of problems in college, especially in the first two years. College students are reporting more stress across the country. Outcome expectations in academia are contributing to much of the student stress (Misra & McKean, 2000). This pressure can come from the student, peers, teachers, family members, or adjusting to a new life in college and finding a new peer group. Stress can affect eating and exercise habits, along with decisions to use drugs and alcohol irresponsibly (Hayman et al., 2007; Hicks & Miller, 2006). Women more often than men are concerned about their current circumstances, even when their circumstances are

equal. However, men do not appear to employ as many effective stress management strategies during anxiety (Kettley, Whitehead, & Raffan, 2008).

Quality of life encompasses many of these health variables faced by college students. In a huge way, college completion is a measure of life satisfaction in a general sense during the college years. Only about 60% of those who begin college as freshmen continue to completion after four years (Pittman & Richmond, 2008). Although the college years are often viewed as a time of freedom and fun, actual college students view life satisfaction through achievements, relationships, and independence (Ozmete, 2007). Too much freedom has been related to an apathetic attitude for college students as they begin to lose their focus on life, thus leading to many poor behavior outcomes (Hickerson & Beggs, 2007). Low quality of life is related to infrequent exercise and poor physical health, low self-esteem, alcohol abuse, and stress (Hicks & Miller, 2006; Hayman et al., 2007). College women more often have a closer connection to college faculty than college men and are more concerned about their immediate comfort than men. Differing leisure activity habits are selected during college based on gender (Mandell, 1992; Hickerson & Beggs, 2007; Ozmete, 2007).

Self-esteem is often a health variable that is overlooked in relation to its affect on college students and how much it relates to other health variables. Many college students suffer from low self-esteem, which is influenced by family interactions and changes in lifestyles upon entrance into college (Toews & Yazedian, 2007). An opposite problem with self-esteem during college is that it can exist at a level that is too high to provide success, especially in academics. Many students enter college with an overinflated perception of their abilities and thus do not put forth as much effort as necessary in

college courses (Jensen & Moore, 2008). Low self-esteem is correlated with stress, alcohol use, poor physical health, and poor quality of life in general (Hicks & Miller, 2006; Hayman et al., 2007; Kennedy, Kassab, Gilkey, Linnel, & Morris, 2008). Self-esteem levels vary depending on differences in gender, differences in college selection, frequency of close contact with faculty, and social factors (Sax, 2009; Latha, Hegde, Bhat, Sharma, & Rai, 2006). These five health variables, low levels of exercise, stress, excess alcohol, poor quality of life, and low self-esteem, faced by college students represent five needs for this population. Many of these factors relate to each other in some way. For example, many times one poor health variable will build on another poor health variable to produce a cycle of ever-increasing negative health outcomes. Because of the cyclical and related nature of these health variables, further studying the relationships and gender differences among exercise, stress, alcohol misuse, quality of life, and self-esteem will contribute to a broader resource of knowledge to use in addressing these issues.

Problem Statement

Despite the knowledge gained from these research findings, no studies have included measures and associations of all five variables mentioned: alcohol use, self-esteem, quality of life, exercise, and stress. One study (Joiner & Tickle, 1998) has included association comparisons among the four variables of stress, self-esteem, exercise, and alcohol. Only one study (Denton, Prus, & Walters, 2003) has included gender-specific comparisons of each of the five variables. Because of the lack of knowledge concerning associations of these variables among any population, further studies were needed. No study has used all five selected valid and reliable survey

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instruments to address each health variable in one study, so further studies add to the accuracy and the credibility of current knowledge. Also, although gender-specific comparisons have been applied to one other study, additional studies are needed to reinforce knowledge already gained and contribute additional pieces of information, which can then be applied to future interventions. Therefore, this proposed study was needed.

Purpose of the Study

The purpose of this study was to measure these five variables in a convenience sample of male and female college students and identify total group and gender-specific relationships among the five variables. The resulting data were examined to identify existing associations between the two health behavior variables (exercise and alcohol use) and three psychosocial variables (self-esteem, quality of life, and stress). Gender-specific data groupings were analyzed to test for gender differences for each variable and potential gender-specific patterns of association among all five variables.

Hypotheses

Eight hypotheses were tested in this study for associations among the five variables (alcohol, exercise, stress, quality of life, and self-esteem), including gender. The hypotheses follow:

H_1: There is a difference in self-reported male and female participant alcohol consumption.

H_2: There is a difference in self-reported male and female participant exercise patterns.

H_3: There is a difference in perceived male and female participant stress.

H_4: There is a difference in perceived male and female participant quality of life.

H_5: There is a difference in perceived male and female participant self-esteem.

H_6: A statistically significant pattern of association among the five health variables (alcohol, exercise, stress, quality of life, self-esteem) will be detected for the total group responses.

H_7: A statistically significant pattern of association among the five health variables (alcohol, exercise, stress, quality of life, self-esteem) will be detected for the male group responses.

H_8: A statistically significant pattern of association among the five health variables (alcohol, exercise, stress, quality of life, self-esteem) will be detected for the female group.

Operational Definitions

The following terms were defined for the purpose of this study and were

measured using self-administered psychometric survey instruments:

1). Quality of Life – self-rated degree of physical, social, role, vitality, pain, and cognitive functions (Chen, Li, & Kochen, 2005).

2). Self-Esteem – an individual's sense of his or her value or worth (Blascovich & Tomaka, 1991).

3). Stress – measure of the degree to which situations in one's life are appraised as stressful (Cohen, Kamarck, & Mermelstein, 1983).

4). Alcohol Abuse – binge drinking by consuming five or more drinks in a row in the last two weeks prior to survey completion (Princeton University, 1998).

5). Physical Activity – daily activities performed at work, during house or yard work, moving from place to place, recreational time, while exercising, or playing sports (International Physical Activity Questionnaire, 2002).

Delimitations

The study was delimited by the following:

1). All participations accessed the survey instruments online during a regularly-scheduled class time.

2). All participants completed the surveys during a one-week period in the spring 2010 semester.

3). All participants were enrolled in the course Health and Human Behavior HED 1145.

4). All participants were enrolled in a private, southern university in the United States.

Limitations

The study was limited by the following:

1). The participants in this study were recruited from a convenience sample of five sections of a required wellness course.

2). The assessment time frame was limited to one week in the semester.

3). The assessments were only completed once by each participant.

4). The study was only conducted on one college campus.

CHAPTER TWO

Review of Literature

This chapter provides a brief overview of college life and health issues faced by college students. Following the introduction overview, a more in-depth discussion of the current findings in health literature on exercise, exercise research, alcohol use, alcohol research, stress, stress research, self-esteem, self-esteem research are provided. Finally, relationships among the four health variables and a summary are included.

Introduction

In the United States, over 12 million students attend 3,600 different colleges, and over half of these students are between the ages of 18 and 24 (Racette, Deusinger, Strube, Highstein, & Deusinger, 2005). Many of these students have less than optimal health during their college years. Students struggle with a wide range of health problems that lead to difficulties in school and relationships and overall quality of life. With this in mind, the research study proposed will investigate the outcomes of various unique and valid health surveys administered in a college population. Thus, to fully describe the need for further development of documented college struggles and need for interventions, a review of college life and its relation to student exercise, alcohol use, stress, quality of life, self-esteem, relationships among all of these variables, and a final summary are in order. Both positive and negative health variables will be investigated in relation to this study.

Exercise

Starting at age 15, continuing through high school, and increasing even more in the college years, individuals experience a dramatic decline in regular exercise habits (Racette et al., 2005). Students followed from their first college year through the end of their college experience did not meet the recommended exercise requirements for their age in one study. This same finding happens nationwide on college campuses, with only about half of college students exercising regularly. This is especially disconcerting because after college graduation exercise rates appear to drop off even more with only about one-fourth of adults meeting specified exercise requirements (Racette et al., 2008). Both positive and negative factors are influencing the exercise choices of college students.

Social support is a significant motivator for choosing positive exercise and diet behaviors, especially in college and teenage populations. Friends as opposed to family members were cited as influential during times of difficulty or when a college student needs encouragement. Researchers found that females and males are influenced more positively in making diet and exercise choices upon receiving comments from opposite sex friends (Gruber, 2008).

Researchers have looked at public figure worry or social physique anxiety, which is worrying about how others perceive physical appearance, and compulsory exercise patterns among college individuals. Females had more public figure worry when compared to males. The more frequently one exercises was associated with more feelings of compulsory exercise. In 2005, the National College Health Assessment found

that over half of women report exercising because of the desire to lose weight, which is higher than what men report. Females and males both had similar feelings of compulsory exercise. Having less public figure worry was associated with more participation in exercise (Chu, Bushman, & Woodard, 2008). It is often found that college women tend to want to lose excess weight and fat, but at least 32% of such women in a diet study admitted they did not participate in any regular exercise (Malinauskas, Raedeke, Aeby, Smith, & Dallas, 2006). Although there may be a desire to participate in a health promotion activity, public figure worry may be preventing certain college individuals from engaging in such an activity.

College females and males differ in their internal desire to exercise and in their exercise patterns in general. In 2005, the National College Health Assessment found that over half of women report exercising because of the desire to lose weight, which is higher than what men report (Chu et al., 2008). Females more often desire to participate in exercise based on appearance, while men more often desire to participate in exercise based on contests and status (Kilpatrick et al., 2005). It has also been documented that men more frequently engage in exercise when compared to women, but men also engage in more sedentary activities such as using electronics (Buckworth & Nigg, 2004).

Exercise Research

One specific instrument, the Short Form-International Physical Activity Questionnaire (IPAQ), has been validated for use when measuring self-reported exercise or physical activity patterns and was created in Geneva in 1998 (Craig et al., 2003; "International", 2002). This instrument was assessed extensively in 12 countries in 2000. This Physical Activity Questionnaire has now been deemed valid and reliable for

researching population physical activity levels across nations. This questionnaire has been used in at least 32 research studies and is designed to target people between the ages of 15 and 69 ("International", 2002). The IPAQ has been determined valid and reliable to be used as an assessment tool among college students. A study assessing 137 college freshmen women utilized the IPAQ in a pretest-posttest design in 2007. Between semesters of their freshmen year, students walked significantly less by 446 MET-minutes/week. Participants reported a median of 600 MET-minutes/week in the fall semester and 480 in the spring semester for vigorous activity. Participants reported a median of 240 MET-minutes/week in the fall semester and 240 in the spring semester for moderate activity. Participants reported a median of 1188 MET-minutes/week in the fall semester and 742 in the spring semester. Total median MET-minutes/week was 2639 in the fall and 2079 in the spring (Randall et al., 2007).

Alcohol

Out of several million college students in the United States, one-third of these students fit in the category of alcohol misuse (Borsari, Murphy, & Barnett, 2007). Forty percent of college students as a whole admitted to having engaged in binge drinking behavior at least once in the 14 days prior to being interviewed in one study. Students who choose binge drinking behavior are at an increased risk of penalties, such as poor school performance, encounters with the law, and casual sexual activity. Among college students annually, 1,700 deaths are related to alcohol (Martens et al., 2008). While binge drinking is very dangerous in itself, some college students put themselves at even more risk. 10 to 20% of college freshmen, especially males, admit to binge drinking two times more than what is considered normal binge drinking parameters. Caucasian race, male

gender, fewer religious beliefs, a risk taking personality, high school alcohol use, and parent approval of drinking are all factors that contribute to making a college freshman more likely to engage in excessive drinking behavior (Borsari et al., 2007).

As to why students choose excessive drinking, dealing with negative first year events is one reason. Expectations about the changes in behavior and personality induced by alcohol, achieving a certain social status, overestimation of beliefs about drinking norms on campus, Greek association, and engaging in drinking competitions are also all reasons that freshmen choose excessive drinking (Borsari et al., 2007).

While there is an increase in drinking behavior, drug use, and promiscuity once in college, there is a decrease in violence and drinking while operating a vehicle. Drinking tends to increase due to less parental supervision and more privacy in college, whether in a dorm or apartment. More freedom and privacy could also contribute to increased promiscuity and drug and alcohol use because there is a feeling of secrecy in college, with friends and families being relatively unaware of students' behaviors. After migrating out of the dorms to apartment living, students may increase their drinking and driving behavior (Fromme, Corbin, & Kruse, 2008). Although more individuals increase their drinking behavior once in college; however, there are some surprising other behavior choices made. One out of every three students' drinking behavior stays relatively the same when compared to high school, and about 30% of students choose to actually consume less alcohol than when in high school (Fromme et al., 2008).

In a study conducted by Martens et al. (2008) found that, among college students, depressive signs are related to poor alcohol outcomes but not necessarily to alcohol intake. Protective behavioral strategies (PBS), which are techniques and self-guidelines

established ahead of time to limit excessive drinking, have been found to only partially limit the association between depressive signs and alcohol intake. This partial outcome is estimated to occur because of the limited mental capacities of an individual suffering from depressive signs and also the individual wanting to be alone when feeling sad (Martens et al., 2008). College students who are experiencing depressive signs do not usually drink more alcohol when compared to other students; however, when they do engage in drinking, they are more likely to have a poor alcohol outcome. Although PBS was not as successful as was hoped, it is still implicated for use in college settings to help diminish excess drinking. It will most likely be more challenging to apply to depressed individuals; however, it is still recommended as an aid (Martens et al., 2008).

Along with PBS, brief motivational interventions (BMIs) have been and are now implicated in reducing freshmen drinking (Borsari et al., 2007). BMIs normally include two aspects: an assessment of amount and problems of drinking, and specific motivational techniques (Dimeff, Baer, Kivlahan, & Marlatt, 1999). Because college drinking is so prevalent and many students are not motivated to change their behaviors, BMIs are a good fit. BMIs address many of the drinking incentives and consequences and do not take much time or effort on the part of the individual (Borsari et al., 2007).

College drinking patterns differ among males and females. Because of the vast problem with alcohol on college campuses, it is of interest to understand why certain groups of people choose not to drink alcohol. For women, the choice to abstain from alcohol is related to social stigmas and low environmental exposure in general to drinking. Men choose to abstain from alcohol because of wanting to avoid the negative consequences of drinking. This suggests that men often experience drinking more

alcohol in general compared to women and are more familiar with the bad side effects (Bernards et al., 2009). It has been well documented that overall, male college students engage in more binge drinking when compared to college women (Robinson, 1998; Piane & Safer, 2008). Women believe a smaller number of their total friends drink and feel less pressure from friends to drink than men (Piane & Safer, 2008). On average, women increase their weight slightly more than men during the first year of college. This increase gain has been attributed to consumption of more alcohol in men and intense pressure to succeed in women (Economos et al., 2008).

Alcohol Research

One specific instrument, the Core Alcohol and Drug Survey, has been validated for use when measuring self-reported alcohol patterns. In 1987, the Fund for the Improvement of Postsecondary Education (U. S. Department of Education, 2009) formed a team of experts to create a survey to assess college alcohol and drug use. The point of this survey creation was mainly to establish a uniform survey that could be administered on many campuses. More than 250,000 students on 800 various college campuses have taken the Core Alcohol and Drug Survey. Currently, the Core Institute is in charge of administering and overseeing the Core Survey at Southern Illinois University (Presley & Others, 1994). The Core Survey has been used in assessing the relationship between emotional intelligence, alcohol perceived norms, and alcohol use for undergraduates on a college campus (Ghee & Johnson, 2008). The Core Survey can be used in conjunction with the College Alcohol Survey (DeJong & Wechsler, 1998). Consequences of excessive alcohol intake using the Core Survey have been studied (Martens, Brown, Donovan, & Dude, 2005).

Other United States universities have conducted studies using the Core Survey and posted their results online for reference and information for the public. In 2004, students attending the University of Maine Fort Kent completed the Core Survey. High frequency alcohol use among the University of Maine students was 21.8%, and the reference group from 93,000 students from 197 campuses in the United States was 22%. University of Maine students who had been arrested for a DWI/DUI was 0.8% and the reference group student DUI arrests were reported at 1.4%. Those who used alcohol three times per week were reported at 21.8% and 22%, for the University of Maine and the reference group respectively (Core Alcohol and Drug Survey – Short Form, 2004). From the University of Arkansas Core Survey assessment, 20% of students admitted binge drinking in the previous two weeks. University of Arkansas students reported their high frequency alcohol use at 12.8% and the reference group was 23.5%. University of Arkansas students who had been arrested for a DWI/DUI was 1.3% and the reference group student DUI arrests were reported at 2%. Those who used alcohol three times per week were reported at 12.8% and 23.5%, for the University of Arkansas and the reference group respectively (Core Alcohol and Drug Survey – Short Form, 2009).

Stress

About 54 million people who live in the United States struggle with mental illness in some form. Of these mental illnesses, depression is the most commonly seen. 12.6% of college women and 6.2% of college men admitted to clinical depression, which is similar to the general population of adults in the United States (Adams, Wharton, Quilter, & Hirsch, 2008). Not only does depression afflict college students, but extreme worry is even more prevalent. In 2000, 52% of college students admitted to experiencing a high

amount of worry. In 2006, 33% of students believed that extreme worry in their life had resulted in poor school performance outcomes. Over half of students believe extreme worry to also impact their choices to drink excess alcohol (LaFountaine, Neisen, & Parsons, 2006). Sadness, stress, and hopelessness work together synergistically and have been correlated with increased levels of physical illness in college students (Adams et al., 2008).

Depression is the not the only mental illness affecting stress on college campuses. Adult separation anxiety disorder (ASAD) has been recently investigated in regards to college students who leave home for the first time. In one study, 21% of students fit the criteria for ASAD diagnosis. While ASAD is not necessarily related to poor academic outcomes for those diagnosed students, they do experience a tremendous increase in stress as compared to other students. Stressors are experienced in a much more intense way than by those students not diagnosed with ASAD (Seligman & Wuyek, 2007).

Any life transition in general is difficult with the transition from home to the first year of college being especially difficult to negotiate (Hicks & Heastie, 2008). There is an increase in school performance pressures, and there is an increase in accommodating changing relationships with family, self, and friends. Students often struggle with poor physical and mental health issues. The transition has been associated with increased levels of worry, sadness, and self-doubt. Especially if the transition is not smooth, it can elicit less self-confidence and lack of self-belief. Students who live in the dorms have been found to report more stress in their life. These students also were found to be more at risk for drug use, alcohol use, poor nutrition, and poor exercise habits (Hicks & Heastie, 2008). Stress is associated with minor physical maladies and also emotional

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distress, possibly leading to suicidal ideation. A mental and physical intervention has shown to decrease stress over six weeks that utilizes relaxation techniques, mental restructuring, and diet and exercise (Winterdyk et al., 2008).

Although there is a documented relationship between poor health and low financial status, this is also estimated to be true among college populations, which do not necessarily fall into the normal financial categories (Nelson, Lust, Story, & Ehlinger, 2008). Credit card debt is one area that plagues college students and is a measure of financial struggles. In previous studies performed using adults, it was found that credit card debt was associated with more stress, worry, and poor emotional health. Students assessed for credit card debit in excess of $1,000 were found to also have a variety of poor health behaviors and outcomes including being overweight, having high fat diets, having few exercise patterns, engaging in excessive drinking and drug use, and having poor stress reduction techniques (Nelson et al., 2008). Because of this overlapping finding about stress, multiple behavior interventions are recommended to accommodate and address more than one health variable at a time. Improving one area, such as stress management, will likely lead to better management of other health risk behavior variables in college students' lives. Personal therapy and improved university knowledge and understanding are both recommended to address credit card debt in the college population (Nelson et al., 2008).

College men and women have different stress patterns. It has been studied that as a whole men and women in the college age group have similar finances and means. However, women more often are concerned about their life situation and have a lower outlook on their own worth. Men appear to be more apathetic about their life situation.

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However, for men and women who do become stressed easily and frequently, men emerge more truly worse off than women with the same stress problems. This is largely related to women developing healthy and effective stress relief strategies such as social support (Kettley et al., 2008). For stress relief, men and women appear to turn to friends for comfort. However, women appear to place friend comfort at a higher importance than men (Asberg, Bowers, Renk, & McKinney, 2008). Additionally, anxiety increases for women when they make a counter point in a college class discussion, but anxiety decreases for men when they make a counter point during class (Sax, 2009).

Stress Research

One specific instrument, the Perceived Stress Scale, has been validated for use when measuring perceived stress. This scale was originally designed by Sheldon Cohen in 1983. The PSS is considered the gold standard in assessing stress (Deckro et al., 2002; Winterdyk et al., 2008). An experimental study was conducted assessing 90 college students' stress levels. Participants in the control group did not take part in any relaxation intervention during the course of the study, and the participants in the experimental group did take part in the intervention. The Perceived Stress Scale was one of the instruments used in the study. The mean pre-intervention score for the PSS was 29.86 for both the control and the experimental groups. The pre-intervention mean score for the experimental group was 30.24, and the post-intervention mean score was 25.13 (Deckro et al., 2002). An additional study utilized the Perceived Stress Scale in a descriptive study of college students and discovered females had an average score of 18.4 and males had an average score of 17.4 (Roberti, Harrington, & Storch, 2006).

Self-esteem

College is a time when self-esteem is very vulnerable to positive or negative molding. There is a positive association between college adaptation and self-esteem. This college adaptation is related to all aspects of college including studies and friend activities. Parental encouragement is suspected of easing this adaptation process in college, but this encouragement may only relate to students if their parents actually attended college in the past. Especially if parents are unable to relate to their students' experiences in college, these students are likely to depend heavily on friends for comfort and encouragement (Toews & Yazedian, 2007). Additionally, often when students first enter college, their expectations and beliefs about their own academic abilities do not match their actual performance in college courses. Even students who have failed to attend class numerous times and not attended extra tutoring sessions outside of class still believe they will earn at least an average grade at the end of the class. Students who do attend class and who do complete extra study sessions have better grade outcomes. Often students do not do as well in classes as they once hoped because they misjudge their own motivation to complete the necessary work to receive a positive outcome in the course. Also, students often do not exhibit positive actions that contribute to good academic results (Jensen & Moore, 2008).

Self-esteem differs in men and women in college. Women who choose to attend college far away from their original home tend to increase their self-esteem. However, differences in men's self-esteem have not been found between attending college close or far away from home (Sax, 2009). Women more often base their self-esteem on discussions with professors, while men do not.   The more frequent meetings between

professors and students in a work relationship tends to change students' perceptions of gender expectations. When women work closely with a professor, gender roles are seen as more classic. For men, gender roles are seen as evolving and not classic when working closely with a professor (Sax, 2009). When college men are placed in a gender minority cluster of people, their self-esteem tends to decrease. Women, on the other hand, experience a self-esteem decrease when they are in a cluster of people with gender majority (Viallon & Martinot, 2009). Overall, men often view self-esteem through their strength and success, while women often view self-esteem through good looks and allure (Latha et al., 2006).

Self-esteem Research

One specific instrument, the Rosenberg Self-Esteem Scale, has been validated for use when measuring perceived self-esteem. This scale was developed by Morris Rosenberg in 1965. This scale has been used to assess self-esteem in adolescents and the impact on college self-esteem and forecast of college adaptation (Smith, 2007). The original scale was developed by Morris Rosenberg to assess high school students' self-esteem in New York (Crandal, 1973; Rosenberg, 1965; Wylie, 1974). In one study, 88 college participants completed five different surveys to assess mental health. The Rosenberg Self-Esteem Scale was used. The male mean score was 30.18, and the female mean score was 29.71 (Cheng & Furnham, 2003). In another study, college female participants completed three surveys, including the Rosenberg Self-Esteem Scale. The mean score for self-esteem in this study was 21.22 (Latha et al., 2006).

Relationships Among Variables

It has already been reported that college students struggle with various health variables including alcohol abuse, physical inactivity, stress, and low self-esteem. Some relationships between these health variables already exist and have been documented in health studies. First, alcohol is often consumed by college-aged individuals in response to stress. This is an example of using a negative health behavior to cope with another negative health outcome. It has also been documented that freshmen college students who exercise regularly have been found to drink in excess more often than those who do not exercise regularly (Moore & Werch, 2008). Studies conducted in the college population reveal an association between poor coping behaviors and alcohol abuse (Britton, 2004). A high pressure academic environment leads to further increases in the cycle of using alcohol as a coping behavior. It has been documented that students engage in drinking more often due to anxiety because of school rather than because of friend influence. Of students who use alcohol in excess, women have been discovered to experience more anxiety than men (Keiffer, Cronin, & Gawet, 2006; Gleason, 1994). However, overall, men drink more often in response to anxiety when compared to women (O'Hare, 2001). Men more often report drinking to relax, while women report drinking to widen their group of peers (Keiffer, Cronin, & Gawet, 2006; Gleason, 1994).

Additionally, unconstructive stress reduction techniques and a personality predisposed to high achievement work together to forecast increased alcohol use and dire physical fitness (Pritchard, Wilson, & Yamnitz, 2007). Alcohol abuse can lead to various detrimental consequences such as violence, and these consequences ultimately leading to high anxiety. Therefore, alcohol is indirectly related to anxiety in this way (Flack et al.,

2007; Gleason, 1994). Students who have low self-confidence tend to drink in excess more often than students who have a high self-confidence (Glindemann et al., 1999). Overall poor physical health is related to increased alcohol intake among college students (Economos et al., 2008).

Second, exercise and certain positive health variables have been shown to increase a positive behavior and decrease several negative behaviors. For example, exercise appears to decrease depression and anxiety in college students (Roth, Wiebe, Fillingim, & Shay, 1989; Winderdyk et al., 2008). Additionally, several study authors have discovered that some college individuals use exercise as an effective substitute for alcohol abuse (Brown et. al, 2009; Ussher, Sampuran, Doshi, West, & Drummond, 2004). Students who form substantial friendships during college appear to have higher self-esteems. Those students with friend support exhibited better grades in school and less stress (Pittman & Richmond, 2008).

Third, an overall sense of poor wellbeing is increased in many college students due to stress and low self-esteem. Experiencing a poor sense of wellbeing is in turn related to alcohol abuse and poor physical health. For example, activities on campus designed for new college students to adapt to college life, decrease anxiety, and increase quality of life have been found to actually increase anxiety and therefore decrease college quality of life. College stigmas and regular college occurrences lead to negative health actions and induce anxiety, such as alcohol use and getting little sleep in order to study (Hicks & Miller, 2006). A lack of adequate adaptation experience or skill level upon entering college can lead to more anxiety and less self-confidence. Tracked anxiety-

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producing life occurrences during college have been correlated with decreased self-confidence (Hayman et al., 2007).

Additionally, low back pain is an indicator of inadequate physical health and inadequate quality of life. There is a 42% prevalence of low back pain among young people. This physical manifestation is related to anxiety, low self-esteem, and a lack of positive friendships (Kennedy et al., 2008). Lack of an adequate sense of positive wellbeing is related to a lack of recreational pleasure, which is another problem in college populations (Hickerson & Beggs, 2007; Kilpatrick et al., 2005). Promotion of strict and ordered physical activity is often encouraged more than relaxed game-oriented physical activity during college (Kilpatrick et al., 2005).

Summary

College students face many struggles with health, particularly exercise, alcohol misuse, stress, low self-esteem, and low quality of life. Although there are some interventions already in place to address these health variables, students continue to struggle. As demonstrated by the review of literature, college students are in desperate need of effective interventions to help achieve better wellness. This in turn will reduce academic failures and bring the focus of college back to intellectual excellence. More well-rounded individuals from these universities will be equipped to better serve communities across the United States. Additionally, addressing these problems while in college will set a pattern of prevention that will continue after college and into adulthood.

There are many connections and overlaps among all of the college life variables. Many college individuals want to lose weight, but still, they do not engage in regular exercise. Little regular exercise is related to worry about one's appearance, and thus,

such an individual will not want to go out in public to exercise. Inadequate exercise is also related to a lack of coping skills and alcohol use. Alcohol misuse is related to more depressive feelings and increased risk taking, stress, and low self-esteem. Stress in college is related to more depressive feelings, excess alcohol consumption, poor coping, and exercise. Low self-esteem is related to increased alcohol consumption and low quality of life. Low quality of life is related to low self-esteem, stress, excess alcohol consumption, and less exercise. All of these health variables are interrelated. Shortcomings in one area are seen to affect most, if not all, of the other college life variables. This is interesting because a positive behavior, such as exercise, is connected to negative behaviors, such as alcohol misuse and stress. Because these variables are all connected, addressing one area will help promote change in other areas, even though they are both positive and negative.

Because all of these health variables are related and influence each other in positive and negative directions, it is imperative to further investigate these patterns among the variables and between genders. This will eventually guide the creation of new interventions for college populations to achieve better health outcomes for future populations. This study will reveal a deeper understanding of the four key variables and their relationships that are major health problems for the college population. Although some information about these variables has already been established, never before has one study attempted to assess the extent of the problems for each variable on a Southern university campus, the extent of the relationships between variables, and new emerging relationships among variables and genders. Never before have all of these variables been studied using a combination of all four valid health surveys and also assessing gender

differences; thus, this study has offered new insights into the current college health status and to the research profession in general. Investigating all of these differing and imperative aspects of health in this study is essential to understanding the college population and defining its health problems.

CHAPTER THREE

Methods

Introduction

The goal of this study was to determine whether associations exist among two

health behavior variables (self-reported exercise and alcohol use) and three psychosocial

variables (perceived self-esteem, stress, and quality of life) in a convenience sample of

college students. However, due to time and financial constraints near the time of data

collection, only exercise, alcohol use, self-esteem, and stress were assessed. Thus,

quality of life and its valid and reliable survey instrument, the Short Form-36, were not

used in this study. Results of this descriptive study were used to examine the possibility

of existing associations among the health variables and determine whether gender

differences were evident in the sample. Details related to participant sampling,

instrumentation, methods and procedures, and data analysis are described below.

Sampling

College students attending a moderately-sized southern university were

participants in this study. Participants were recruited from a convenience sample of 90

students enrolled in five sections of the course HED 1145 Health and Human Behavior

during the spring 2010 semester. The five sections taught by the HED 1145 coordinator

were used for sampling. The students were invited to participate in the study via an

announcement flyer (see appendix) and oral invitation presented by a member of the

research team during the second class meeting of the semester.

During these presentations, the researcher described the purpose and general data collection procedures of the study and disseminated the announcement flyer and informed consent form (appendix). As described in the disseminated materials and oral presentation, the students were required to attend class on data collection day and complete the surveys for educational purposes. However, they could decline the invitation to serve as a study participant by saying "no" to a prompt for informed consent in the online survey system.

Seventy-four of the 83 students sampled (89% response rate) agreed to participate in the study. Participant demographics are provided in *Chapter Four: Results*.

<center>*Instruments*</center>

Four survey instruments previously validated for use among college students were used to measure exercise behavior, alcohol behavior, perceived stress, and self-esteem. Each instrument, along with two demographic questions (gender and age), was placed in an online system for data collection (see *Methods*). A description of each instrument is provided below with copies of actual instruments included in the appendix. All of these instruments are psychometric scales.

Core Alcohol and Drug Survey-Short Form

The Short Form of the Core Alcohol and Drug Survey (Core Institute, 2000) measures attitudes and perceived thoughts and patterns of alcohol and drug use of self and others on a college campus. The specific categories of this scale are alcohol use, perceived frequency norms, and perceived amount norms related to alcohol and drug use. Internal consistency for each of the three categories follows respectively: .79, .86, and

.94, which are acceptable for this study (Core Institute, 1997; Ghee & Johnson, 2008).

No total scoring range exists for this survey; rather, the survey is comprised of various

demographic questions, amount of alcohol and drug usage questions, and frequency of

alcohol and drug use questions. For the purposes of this study, only one item, average

number of drinks per week, was used. The possible score range for average number of

drinks per week was 0 to 99, with a higher score indicating higher self-reported alcohol

use.

Perceived Stress Scale

The Perceived Stress Scale (PSS; Deckro et al., 2002) measures perceived stress

levels. The instrument consists of 10 questions in which participants mark their

perceived degree of stress based on a five-point scale from never (0) to very often (5).

Four positive item scores are inverted, and then all scores for each item are added to get a

total score. The possible score ranges is 0-40 with higher score reflecting higher levels of

perceived stress. Reported internal consistency coefficiencies have ranged from .84 to

.86, and test-retest reliability has been reported as.85 (Deckro et al., 2002; Winterdyke et

al., 2008).

Short Form-International Physical Activity Questionnaire

The Short Form-International Physical Activity Questionnaire (SF-IPAQ; Craig et

al., 2003) measures self-reported exercise in four measurement areas: vigorous exercise,

moderate exercise, walking, and sitting ("International", 2002). Instrument reliability has

been establish via a Spearman's rho of 0.8 and criterion validity established based on a

median rho of 0.30, findings that are similar to those found in other self-reported

instruments (Craig et al., 2003). A total exercise score is calculated using a metabolic equivalent (MET) assigned to each type of activity. To calculate a participants total exercise score, the assigned MET for each activity level is multiplied by the participant's reported minutes per week (or for some items, minutes of activity per day x days per week) These calculated MET-based scores for each type of activity are then summed and reported as a total exercise score. The assigned METS for each activity are: walking = 3.3 METs, moderate intensity activity = 4.0 METs, and vigorous intensity activity = 8.0 METs. The total possible score range for exercise is 0-3000, with higher scores indicating higher levels of self-reported exercise ("International", 2002).

Rosenberg Self-Esteem Scale

The Rosenberg Self-Esteem Scale (Rosenberg, 1986) has been used to assess self-esteem and adaptation to college among college students (Smith, 2007). The scale consists of 10 4-point Likert items with response choices ranging from strongly agree to strongly disagree. Test-retest reliability has ranged from .82 to .88, and Cronbach's alpha (inter-item consistency) has ranged from from .77 to .88 (Blascovich & Tomaka, 1993; Rosenberg, 1986). . The total possible score range is 10-40 with higher scores indicating higher levels of self-esteem (Blascovich & Tomaka, 1993; Rosenberg, 1986).

Methods and Procedures

During the third week of the spring 2010 semester, the students from the selected five course sections were required as part of their course participation grade to report to the library computer lab for one class session. This section includes a description of

methods employed to document and distinguish between class activity and study

participation and *procedures* used to guide survey completion.

Methods

A carefully constructed identification system was used to allow the course

instructor to verify student participation in the assessment activity (online, in-class survey

completion) as part of their required course participation grade while prohibiting the

instructor's ability to know whether a student allowed the researchers the use of survey

responses in the research study. The methods used for this system were described to the

students and implemented to protect students from possible grade-related repercussions

for not allowing use of their responses as data (i.e., non-participation in the study). These

methods were implemented in three steps described below.

Two weeks prior to data collection day, one member of the research team visited

each HED 1145 section for approximately ten minutes. During that time, the research

team member passed out a double-sided handout with one side reading *An Invitation to*

Participate and the opposite side reading *Informed Consent* (see appendix). The research

team member briefly explained the purpose and procedures of the upcoming Survey Day.

The research team member explained that the Survey Day was part of the students'

participation grade but was not part of their required course project. However, the

students were encouraged but not required to take their results from the surveys, reflect

on the various health areas outlined in the surveys, and apply individual learning to their

course project. The research team member explained that the surveys were to be

completed for the students' individual benefit but that researchers also wished to use the

students' group data for a research study. The research team member emphasized that no

individual responses would be used in the research study, but that it was the students'
decisions to allow researchers to include their responses in the group database.

Students were informed that they could contact one member of the research team
via email, provide their individual Survey ID number, and individual results from the
surveys would be provided to them. Students were informed of an alternate option of
receiving their individual survey results. If the students chose not to request individual
results and link their ID to their name, then students could retake copies of the blank
surveys available online through their blackboard accounts. Students were instructed to
bring their handouts with them on Survey Day. The research team member highlighted
the days, times, and locations for the Survey Days for each class and answered any
questions from the students at that time.

One week prior to data collection day, the research team and the instructor
collaborated to create a set of unique identification (ID) numbers, one for each student.
The instructor assigned each student a different ID number according to alphabetized last
name for each HED 1145 section. Only the instructor and the student knew the
individual student's assigned ID number. These ID numbers were posted under the grade
center on each individual student's online blackboard account.

On data collection day, the five sections of students reported to the library
computer lab for their required in-class activity (i.e., completion of the online surveys for
a participation grade). The course instructor was not present. The students were
instructed by the researchers to enter their instructor-assigned ID numbers into the online
survey system.

After data collection day, the researchers gave the instructor a list of ID numbers for those students who completed the online surveys. This list only contained the ID numbers, which the instructor used to check for student participation in the in-class activity. However, the instructor did not have access to survey responses of individual students, nor was the instructor informed about whether or not any individual students accepted or declined the request to use that student's responses as study data.

The students were protected from any possible repercussions because the researchers did not have access to student names and the instructor did not have access to student responses or decisions related to study participation. Students were reminded orally via the instructor and through blackboard and email announcements of the opportunity to request their individual results by emailing the designated researcher and that the students could also access the blank surveys and survey scoring instructions through their blackboard accounts.

Data Collection Procedures

The entire data collection process was completed over a 2-day period. Participants in each of the five course sections completed all surveys during one of their regularly-scheduled class periods during the 2-day time frame. For each section, the students were greeted by the research team upon arrival at the computer lab and given a handout outlining instructions for accessing and completing the online surveys. The students were directed to first log in to their online blackboard account and retrieve their Survey ID number under *View Grades*. Students were also directed to find a seat in the computer lab and follow the directions on the handout or on the whiteboard to access and complete four surveys. Students were directed to raise their hand if they experienced difficulties or

had questions and that one member of the research team would come assist them at their seat. Copies of the Invitation to Participate/Informed Consent handout were available to students upon request during Survey Day. The sequential steps used are described below.

1. Students were instructed to log onto their individual blackboard accounts and click View Grades to access their three- or four-digit Survey ID number.

2. On the whiteboard at the front of the computer room and on the instruction handout, the students were guided to enter three specific URLs to Survey Monkey, an online survey database. Each link led the students directly to the beginning of each survey. The online system included a condensed version of the informed consent for completing the surveys. Immediately below the informed consent, students were asked: *After reviewing the informed consent, do you wish to continue with the surveys?* Students were prompted to enter "yes" or "no". Students were also asked: *Do you wish to allow BU-LiveWell researchers to include your survey responses in a group database (no individual responses will be seen by researchers)?* Students were prompted to enter "yes" or "no". On the following page, each student was prompted to manually enter his or her instructor-assigned ID number (to validate in-class participation). Additionally, the students were prompted to respond to two demographic questions: gender (male/female) and age. The students responded to the question of gender by clicking "male" or "female", and the student will respond to the question of age by manually entering his or her age.

3. Each participant then completed three surveys on the Survey Monkey system: Rosenberg Self-Esteem, Perceived Stress Scale, and International Physical

Activity Questionnaire. Before the beginning of each survey, the informed

consent, group database questions, ID numbers, and demographic questions were

presented.

4. Once the participants completed the three surveys on the Survey Monkey system,

the students were instructed via whiteboard instructions and a handout to access:

www.coresurvey.com, enter the five-digit login code, to leave the password

blank, and to click *Begin Survey*. The students were reminded via the whiteboard

and handout to click *Complete Survey* at the end of the Core Survey.

Data Analysis

The survey responses were automatically compiled into an Excel file by the

online survey systems. Survey responses of those students who clicked "no" in response

to the "informed consent/study participation" question were eliminated from the Excel

file by the research team. The instructor-assigned ID numbers for students who

consented to study participation were then replaced by new researcher-assigned numbers

for use in data analysis so that no possibility of tracing responses back to the original

instructor-assigned ID numbers was possible.

It was discovered after the data collection event that, due to a survey formatting

error, the responses to the Core Survey (measures alcohol use) could not be used in the

study. The online prompt for participants to enter their individual participant ID numbers

was not included with the Core Survey. For this reason, the researcher was unable to

identify and remove from the data set those surveys completed by students who did not

provide informed consent. Based on standards set by the university internal review board,

this error resulted in the inability to include responses to this survey in this analysis.

All other data generated through data collection were analyzed using SPSS version 17.0 and Statgraphics Plus version 5.0. The level of significance set for all analyses in this study was $\alpha = 0.05$. Responses to the demographic questions about age were used to eliminate from the data base any respondent who was under the age of 18. Survey responses of consenting study participants aged 18 or older were compiled through the online system into a data file (Excel) for use by the research team. This data file was burned to a CD, and the CD was stored in a locked campus location to which only the research team has access. Study results were reported as grouped results with no individual identification attached.

Group means and standard deviations for total scores on all scales were computed for the total group of participants and for each gender-specific sub-group (males and females). To address hypotheses 1-5, a one-way ANOVA was used to test for mean differences by gender for each of the health variables: exercise, stress, and self-esteem. To address hypotheses 6-8, Pearson correlations were used to test for associations among all three variables for the total group and within each gender group. To further test for gender differences in slopes between the total stress and total self-esteem correlation, a post hoc analysis was performed using multiple regression analysis. Analysis results are reported in the next chapter.

CHAPTER FOUR

Results

This descriptive and cross-sectional study was conducted to measure four health-related variables in a convenience sample of college students: self-reported exercise, self-reported alcohol use, perceived stress, and perceived self-esteem. Descriptive statistics were calculated based on responses to each of the four surveys for the total group and each gender group. A one-way ANOVA and Pearson correlation analyses were used to address each of the eight hypotheses in this study. Additionally, a post hoc analysis was conducted. This chapter includes a description of participant demographics followed by a report of analysis results categorized by each hypothesis. Tables 1-9 contain details related to these analyses.

Participant Demographics

Of the 83 students who completed the four study surveys, 74 consented to serve as study participants for an 89% response rate. Just over half (51.4%) of participants were female (n=38) and 48.6% were male (n=36). Ages (Table 1) ranged from 18 to 27 with a mean age of 20.23, and a standard deviation of 1.26. The mode for self-reported age of participants was 20 (38.55% of the sample).

Table 1

Self-reported Age of Survey Participants

Age	Frequency			Percent (%)
	Total	Female Total	Male Total	Total
18	3	0	3	4.35
19	14	9	5	20.29
20	26	13	13	37.68
21	21	10	11	30.43
22	4	2	2	5.80
27	1	1	0	1.45

Hypothesis 1: There is a difference in self-reported male and female participant alcohol consumption.

Although data were collected on participant alcohol consumption using the Core Alcohol and Drug Survey, additional necessary questions to data analyses were left off of the survey unintentionally during data collection on Survey Day. The questions left off of the survey addressed participant consent to use each individual response in a collection of group responses for the research study and addressed survey ID numbers connecting individual data to other individual data from the other surveys used in the study. Because of these essential questions were not included in the Core Survey, any results from the Core Survey were purposely left out of this study. Thus, no statistical analyses were performed on the Core Survey results. Thus, Hypothesis 1 could not be addressed due to a lack of data availability.

Hypothesis 2: There is a difference in self-reported male and female participant exercise patterns.

Descriptive statistics, specifically the mean and standard deviation, were computed for total exercise scores from the International Physical Activity Questionnaire

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(IPAQ). Shown in Table 2, the average total exercise score for participants was 6115.57

MET-minutes or metabolic equivalent-minutes per week ($SD = 5325.47$, $n = 72$) and the

score range was .0-27920.0. The average total female exercise score was 5904.43 ($SD =$

4582.51, $n = 38$) with a score range of .0-20958.0. The average total male exercise score

was 6351.56 ($SD = 6112.67$, $n = 34$) with a score range of .0-27920.0.   As indicated in

Table 3, though the exercise mean score for males was higher than the mean score for

females, results of the one-way ANOVA ($F = .125$, $p = .73$) indicated no statistically

significant difference between these means. For this reason, hypothesis 2 was rejected.

Table 2

Descriptive Statistics for Physical Activity: Total and Gender-Specific Groups

Survey Variable	Mean	Median	Mode	Range	SD	n (%)
Total PA	6115.57	4102.50	.0	27920.00	5325.47	72 (97.3)
Total Female	5904.43	4161.00	.0	20958.00	4582.51	38 (100)
Total Male	6351.56	3633.00	.0	27920.00	6112.67	34 (94.4)

Table 3

One-way ANOVAs for Stress, Self-esteem, and Exercise by Gender

Survey Variable	Groups (Gender)	F	Sig.
Exercise	Between groups	.125	.73
Self-esteem	Between groups	.960	.33
Stress	Between groups	.226	.64

Hypothesis 3: There is a difference in perceived male and female participant stress.

Descriptive statistics, specifically the mean and standard deviation, were

calculated for total stress scores from the Perceived Stress Scale. Table 4 displays the

average total participant total stress score of 15.24 ($SD = 4.75$, $n = 70$) with a score range

of 4-30. The average total female stress score was 15.51 ($SD = 4.23$, $n = 37$) with a score

range of 5-25, and the average total male stress score was 14.97 ($SD = 5.27$, $n = 35$) with

a score range of 4-30. As indicated in Table 3, though the stress mean score for females

was higher than the mean score for males, results of the one-way ANOVA ($F = .226$, $p =$

.64) indicated no statistically significant difference between these means. For this reason,

hypothesis 3 was rejected.

Table 4

Descriptive Statistics for Stress: Total and Gender-Specific Groups

Survey Variable	Mean	Median	Mode	Range	*SD*	*n* (%)
Total Stress	15.24	15.00	15	26	4.75	70 (94.6)
Total Female Stress	15.51	15.00	13	20	4.23	37 (97.4)
Total Male Stress	14.97	15.00	15	26	5.26	35 (97.2)

Hypothesis 4: There is a difference in perceived male and female participant self-esteem.

Descriptive statistics, including the mean and standard deviation, were calculated

for total self-esteem scores from the Rosenberg Self-Esteem Scale using scale

measurement. Table 5 contains the average total participant self-esteem score of 33.57

($SD = 5.04$, $n = 72$) with a score range of 14-40. The average total female self-esteem

score was 34.14 ($SD = 4.33$, $n = 37$) with a score range of 24-40, and the average total

male self-esteem score was 32.97 ($SD = 5.69$, $n = 35$) with a score range of 14-40. As

indicated in Table 3, though the self-esteem mean score for females was higher than the

mean score for males, results of the one-way ANOVA ($F = .960$, $p = .33$) indicated no

statistically significant difference between these means. For this reason, hypothesis 4 was

rejected.

Table 5

Descriptive Statistics for Self-Esteem: Total and Gender-Specific Groups

Survey Variable	Mean	Median	Mode	Range	*SD*	*n* (%)
Total Self-esteem	33.57	35.00	37	26	5.04	72 (97.3)
Total Female Self-esteem	34.14	35.00	37	16	4.33	37(97.4)
Total Male Self-esteem	32.97	34.00	35	26	5.69	35 (97.2)

Hypothesis 5: There is a difference in perceived male and female participant quality of life.

Although the Short Form-36 (SF-36) was scheduled to be included in this study to assess quality of life among study participants, due to time and financial constraints, the SF-36 was not part of Survey Day and no data were collected using this survey. Thus, no statistical analyses were conducted on the SF-36 data and no significant results were found. Hypothesis 5 could not be addressed due to no available information.

Hypothesis 6: A statistically significant pattern of association among the five health variables (alcohol, exercise, stress, quality of life, self-esteem) will be detected for the total group responses.

As explained in a previous section, data representing two originally targeted variables (alcohol and self-esteem) could not be used in this study. However, hypothesis 6 could be partially addressed based on Pearson correlations involving the remaining three variables: total exercise, total stress, and total self-esteem. As can be noted in Table 6, no significant correlations exist between exercise and either of the other two variables. However, stress and self-esteem were significantly correlated, ($r = -.624, p = .000$). Because there was a lack of significant correlations between exercise and stress and between exercise and self-esteem, hypothesis 6 was rejected for these pairings. However,

hypothesis 6 was not rejected for the significant association detected between stress and self-esteem.

Table 6

Correlation Results for Total Stress, Total Self-esteem, and Total Exercise

Survey Variable	Self-esteem		Stress		Exercise	
	r	P-value	r	P-value	r	P-value
Self-esteem	1.000	-	-.624*	.000	.009	.939
Stress			1.000	-	-.056	.650
Exercise					1.000	-

*denotes significant score (p < .05)

Total Stress Scores
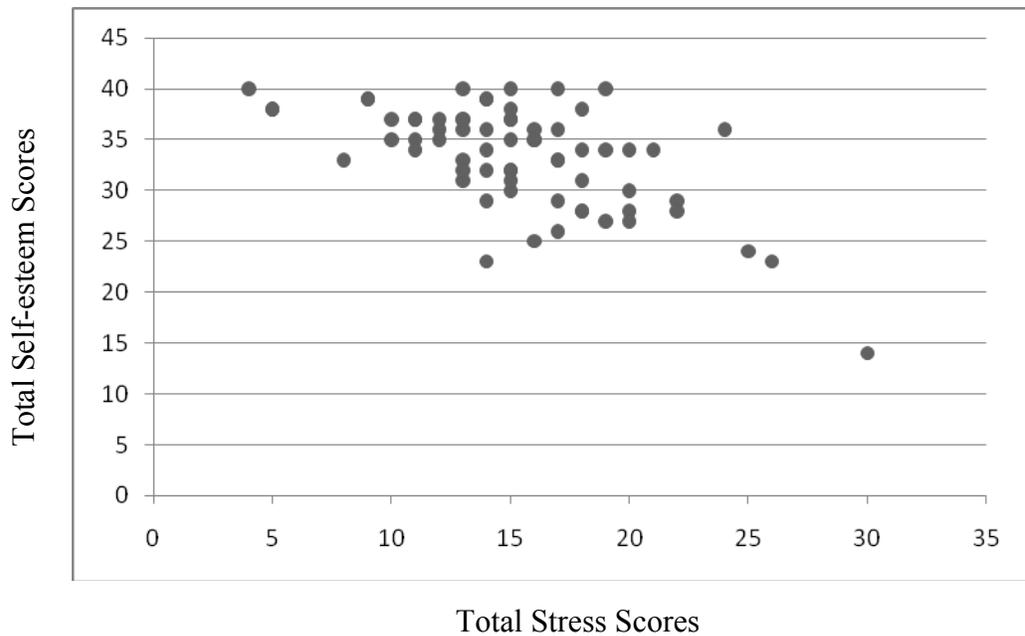
*Figure 1*. Scatter Plot of Total Significant Correlation Scores
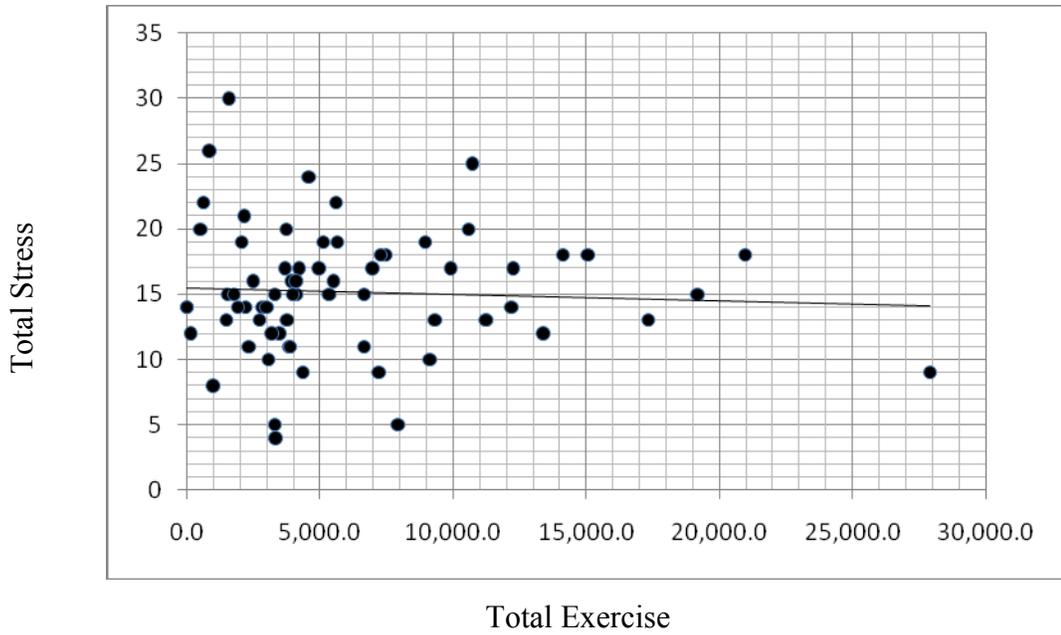
*Figure 2.* Scatter Plot of the Correlation Scores Between Exercise and Stress
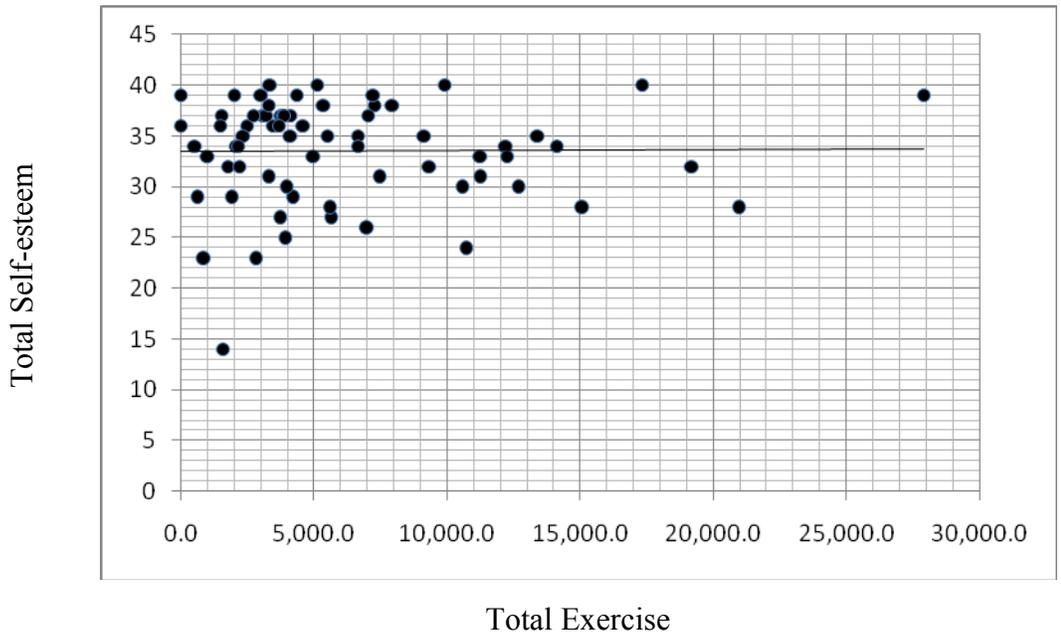
Figure 3. Scatter Plot of the Correlation Scores Between Exercise and Self-esteem

Hypothesis 7: A statistically significant pattern of association among the five health

variables (alcohol, exercise, stress, quality of life, self-esteem) will be detected for the

male group responses.

For the same reasons described in the previous section, Pearson correlations were

performed on three variables: total male exercise, total male stress, and total male self-

esteem. As can be noted in Table 7, no significant correlations were detected between

the exercise score and each of the other two variables. However, stress and self-esteem

were significantly correlated, ($r = -.678$, $p = .000$) among males. Because there was a

lack of significant correlations between exercise and stress and between exercise and self-

esteem for males, hypothesis 7 was rejected for these pairings. However, hypothesis 7

was not rejected for the significant association detected between stress and self-esteem

scores for male participants.

Table 7

Correlation Results for Total Male Stress, Total Male Self-esteem, Total Male Exercise

Survey Variable	Self-esteem		Stress		Exercise	
	r	P-value	r	P-value	r	P-value
Self-esteem	1.000	-	-.678[*]	.000	.097	.590
Stress			1.000	-	-.154	.391
Exercise					1.000	-

[*] denotes significant score (p < .05)
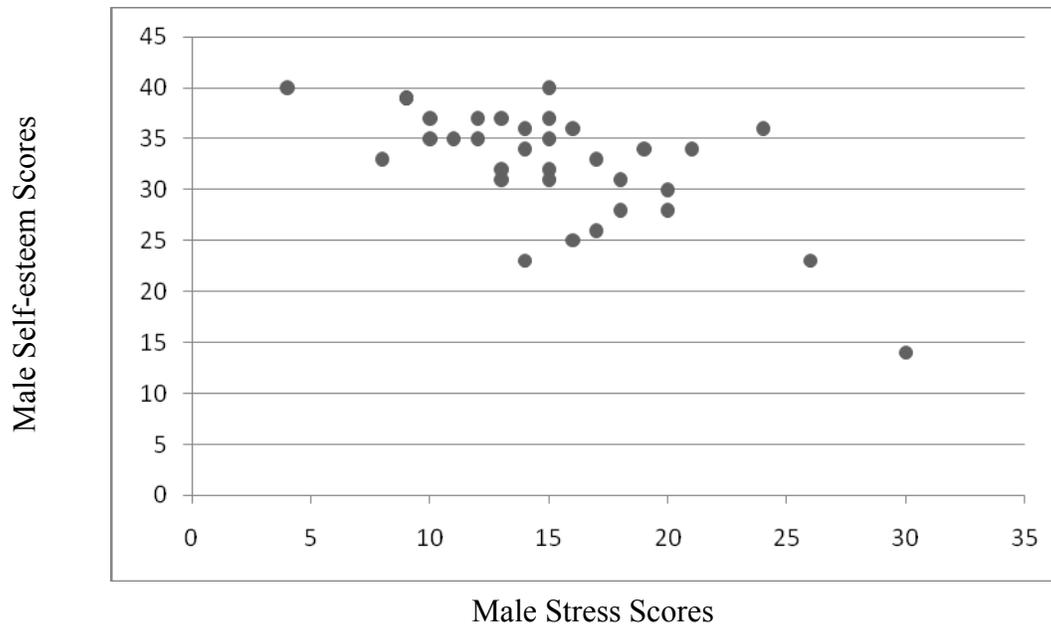
Figure 4. Scatter Plot of Male Significant Correlation Scores

Hypothesis 8: A statistically significant pattern of association among the five health variables (alcohol, exercise, stress, quality of life, self-esteem) will be detected for the female group.

For the same reasons described in the previous section, Pearson correlations were performed on three variables: total female exercise, total female stress, and total female self-esteem. As can be noted in Table 8, no significant correlations were detected between the exercise score and each of the other two variables. However, stress and self-esteem were significantly correlated, ($r = -.566$, $p = .000$) among females. Because there was a lack of significant correlations between exercise and stress and between exercise and self-esteem for females, hypothesis 8 was rejected for these pairings. However, hypothesis 8 was not rejected for the significant association detected between stress and self-esteem scores for female participants.

Table 8

Correlation Results for Total Female Stress, Total Female Self-esteem, Total Female Exercise

Survey Variable	Self-esteem		Stress		Exercise	
	r	P-value	*r*	P-value	*r*	P-value
Self-esteem	1.000	-	-.566*	.000	-.104	.539
Stress			1.000	-	.112	.520
Exercise					1.000	-

*denotes significant score (p < .05)
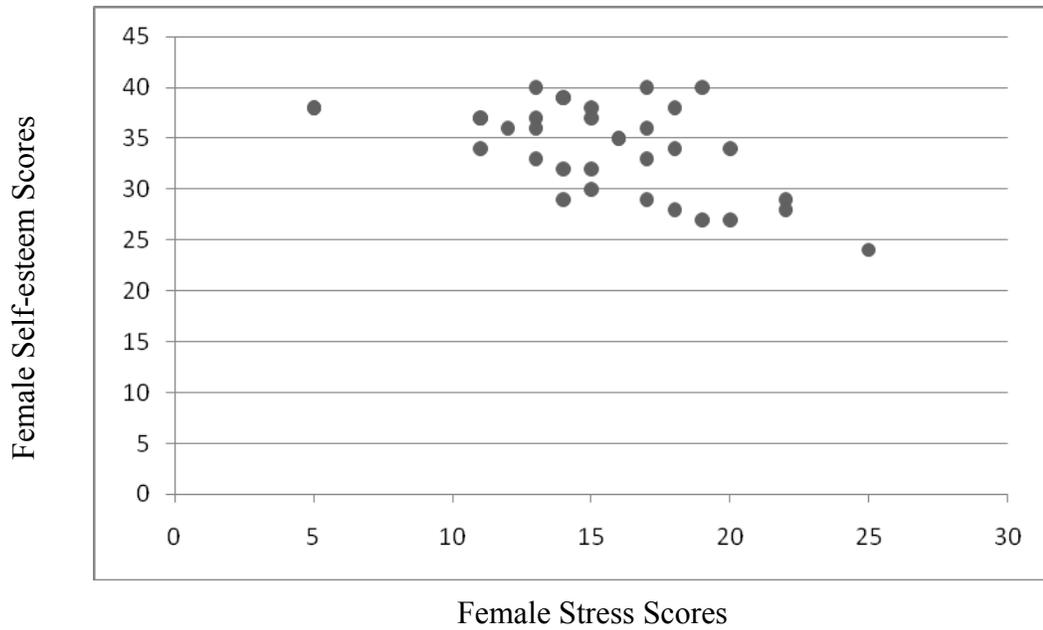
Figure 5. Scatter Plot of Female Significant Correlation Scores

Post Hoc Analysis

After detecting a significant correlation between stress and self-esteem for the total group, male group, and female group, a multiple regression analysis was performed to further explore the nature of the correlations and to test for differences between male and female groups. As noted in Table 9, the nature of the relationship between stress and self-esteem for females was -.59, and the nature of the relationship for males was -.72. After using a multiple regression analysis to compare the male and female slopes and to compare the male and female intercepts, no significant differences in gender for slope or differences in gender for intercept were detected for the correlation between stress and self-esteem. However, the slope illustrated in Figure 6 revealed some notable trends in gender differences regarding the nature of the slope.

Table 9

Nature of the Relationship between Stress and Self-esteem

Survey Variables	Female Slope	Male Slope	P-value for Slopes	P-value for Intercepts
Stress and Self-esteem	-.59	-.72	.520	.118
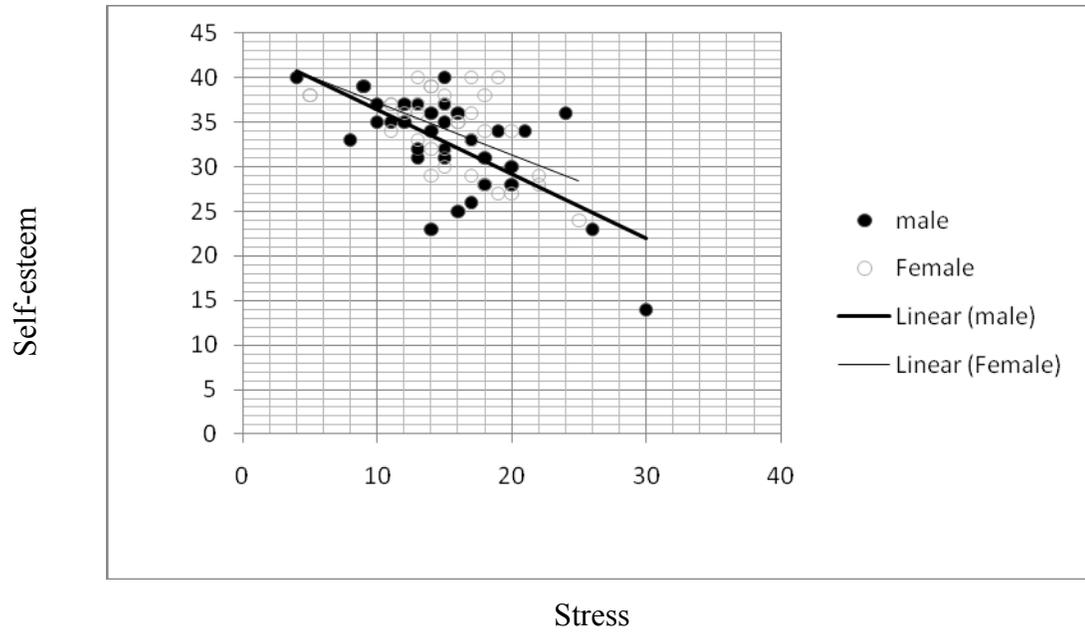
Figure 6. Scatter Plot of Male and Female Significant Correlation Scores and Slopes

CHAPTER FIVE

Discussion

This chapter includes a discussion of study findings. First, limitations of interpreting the findings are presented. Next, a discussion of findings for each of the study hypotheses is presented. These discussions are followed by conclusions and recommendations for future research.

Discussion of Findings

Despite the limitations previously described, the study results generated through this convenience sample of college students can be of use by college professors, student life groups, and university wellness directors as part of a the larger body of knowledge about college student health. Results related to the hypotheses that could be addressed or partially addressed in this study are discussed below.

Hypothesis 2: There is a difference in self-reported male and female participant exercise patterns.

Although the male mean score for exercise was higher than the female mean score, the difference was not statistically significant in this study. However, the detected trend of a higher male mean score is consistent with findings in other studies. Buckworth and Nigg (2004) found college males self-reported exercise frequency more than females per week. Additionally, females have been found to engage less often in exercise per week when compared to men (McArthur & Raedeke, 2009; Mintz & Kashubeck, 1999). One reason for discovering that males exercise more than females may be because men

often are motivated to exercise based on achieving more strength and because they are more driven by competitions (Kilpatrick et al., 2005). Further research on a larger sample of college students on the campus on which this study was conducted could be useful in determining whether this trend may also exist in this population.

Hypothesis 3: There is a difference in perceived male and female participant stress.

Though no statistically significant difference was detected between male and female perceived stress scores, the detected trend of a slightly higher score for females is consistent with findings in other research studies. Kettley et al. (2008) found that females are more often worried than males. In a study conducted by Misra and McKean (2000) female participants were discovered to experience higher levels of stress than male participants. Additionally, in another descriptive study among college students, Roberti et al. (2006) found that female participants scored higher in the Perceived Stress Scale than male participants but lacked statistical significance for that study.

It should be noted that total mean scores for both gender groups were relatively low on a 40-point scale. One possible reason for these lower perceived-stress scores could be that the survey was administered at the beginning of the spring semester when stress levels are usually lower. Because females normally exhibit higher levels of stress, the differences in gender perceptions may have been more evident had the study been implemented later in the semester when stress levels tend to increase. Another possible reason for the lack of detected gender differences could be because few of the students felt stressed during this particular college course, Health and Human Behavior, which is only a one-hour credit designed to promote well-being.

It is also possible that the stress measures are accurate for the sample of students. It is possible that both gender groups in this study were either very equipped at handling stress or may not experience much stress. Or, perhaps female students from this study may experience high levels of stress but cope with the stress very effectively, and male students either do not experience much stress or ignore it; thus, equalizing the male and female mean stress scores. This last possibility is also consistent with other current research (Kettley et al., 2008; Misra &McKean, 2000).

Hypothesis 4: There is a difference in perceived male and female participant self-esteem.

Though no statistically significant difference was detected between the male and female groups for the mean self-esteem scores, a trend was noted in that the mean score for the female group was higher. This differs from the outcome of a study conducted by Cheng and Furnham (2003) in which the Rosenberg Self-Esteem Scale was used among college students. These researchers found that the female average score was lower than the average male score. Conversely, also employing the Rosenberg Self-Esteem Scale, Mintz and Kashubeck (1999) found that self-esteem was significantly higher for Caucasian females than males, results which do follow the same trend detected in this study. Also, this study finding of a lack of statistical significance is consistent with another study done in 2007. Smith (2007) employed the Rosenberg Self-Esteem Scale in a study among college students and found no differences in male and female self-esteem. Because the trend in gender differences found in this study were not statistically significant, it is possible that the slightly higher mean score for females is simply an anomaly. Further research in the sample would be needed to know if this group of male participants truly does possess lower self-esteem. Additional research could also be used

to explore possible differences between the female group in this study in comparison to female groups on other campus to determine whether other factors unique to females on the campus (e.g., higher entrance test scores) where this study was conducted could explain this noted trend.

Hypothesis 6: A statistically significant pattern of association among the five health variables (alcohol, exercise, stress, quality of life, self-esteem) will be detected for the total group responses.

The negative correlation (-.624) detected between stress and self-esteem for the total group was statistically significant. The strength of that association would be considered moderate (Kensington Group, 2005). This finding is consistent with the relationships detected in other studies (Hayman et al, 2007; Pittman & Richmond, 2008). Hayman et al. (2007) found that, among college populations, college life is a stressful time, and, as stress increases, self-esteem tends to decrease. Pittman and Richmond (2008) found that friend support and encouragement can enhance college life and, more specifically, can decrease perceived stress and increase self-esteem. According to Hicks and Heastie (2008), stress is abundant throughout a student's college experience and is especially apparent during the first year of transition from high school to college. If that transition is not made smoothly with few obstacles, a student's self-esteem goes down (Hicks & Heastie). Pritchard et al. (2007) found lower self-esteem was associated with lower emotions, which could indicate stress. A study (Lo, 2002) of Australian nursing students also revealed a significant negative association between stress and self-esteem. The consistency in the results of this study with these other mentioned studies further

supports growing evidence of a negative correlation between stress and self-esteem among college students.

No significant relationships were detected between exercise and any other variable (self-esteem or stress). In previous studies, a negative association has been detected between exercise and stress among college students (Roth, et al.,1989; Winderdyk et al., 2008). A lack of adequate exercise and physical ailments such as low back pain among the college population has been found to be correlated with lower self-esteem; thus, revealing a positive association among exercise and self-esteem (Kennedy et al., 2008).

The lack of statistically significant association between exercise and stress or exercise and self-esteem detected in this study is inconsistent with previous studies. However, replicating this study with a more diverse sample could potentially result in the expected associations. As can be noted in Figures 2 and 3, the exercise scores (MET-minutes per week) for this study were relatively high, with 71% of total survey participants scoring over 3,000 MET-minutes per week. Because exercise in other studies has been associated negatively with stress and positively with self-esteem, having more participants who differ in exercise patterns will likely affect associations between exercise and the other variables. Thus, perhaps this group of study participants was not diverse enough to provide significant association results between exercise and the other variables of stress and self-esteem. Further research is needed to test why no significant exercise associations existed for this study and if the same results exist for a more diverse group of participants.

Hypothesis 7: A statistically significant pattern of association among the five health variables (alcohol, exercise, stress, quality of life, self-esteem) will be detected for the male group responses.

Although there was a significant negative correlation between male stress and male self-esteem ($r = -.678$, $p = .000$), no significant correlations were found between exercise and either of these two variables. Pritchard et al. (2007) detected a similar stress and self-esteem association among male college students. Further supporting this finding, among college freshmen, including males, a negative relationship between stress and self-esteem has also been discovered (Hayman et al., 2007). Researchers found that a negative mood, which was combination of several factors including stress, was associated with lower self-esteem.

As was true for hypothesis 6, the findings of this study in relation to hypothesis 7 match findings in the current literature concerning the negative association between stress and self-esteem. However, although significant associations between exercise and self-esteem and exercise and stress have been detected in other current literature (Roth, et al., 1989; Winderdyk et al., 2008; Kennedy et al. 2008), this study did not reveal any significant associations between these variables. Similar to the discussion of hypothesis 6, a more diverse group of participants in terms of exercise behavior may be needed to detect significant associations between exercise and these other variables.

Hypothesis 8: A statistically significant pattern of association among the five health variables (alcohol, exercise, stress, quality of life, self-esteem) will be detected for the female group.

Male stress and male self-esteem scores were negatively correlated at a slightly stronger association of -.678 than female stress and self-esteem scores (-.566). Pritchard et al. (2007) also detected the same pattern previously described among female college students. Additionally, experiencing high stress levels among college students, including females, has been correlated with lower self-esteem (Hayman et al., 2007). This study's findings match the current literature concerning stress and self-esteem. However, although significant associations between exercise and self-esteem and exercise and stress have been detected in other current literature (Roth, et al., 1989; Winderdyk et al., 2008; Kennedy et al. 2008), this study did not reveal any significant associations between these variables. Similar to the discussion of hypothesis 6 and 7, a more diverse group of participants may be needed to detect significant exercise associations.

Post Hoc Analysis

Eighty-three percent of total participants scored between 10 and 20 on a 40-point scale. Other researchers have found average scores between 15 and 30 for the Perceived Stress Scale (Deckro et al., 2002; Roberti et al., 2006). Although there was a lack of a significant difference in the nature of the relationship or slope between stress and self-esteem for males and females, males did have a steeper slope than females (see Figure 6). This indicates that males in this study had a stronger negative response to stress than females. Also notable is that one out of five participants who scored below 10 on the

Perceived Stress Scale were male. Thus, males in this study perceived less stress than females, but males had a stronger response to stress than females as well.

These noted trends are consistent with that of other researchers (Kettley et al., 2008; Misra & McKean, 2000; Roberti et al., 2006) who found that males perceive less stress than females. A stronger response to stress means that as stress increases, males experience a sharper decline in self-esteem compared to females. The stronger male response to stress trend may be partly explained by Kettley et al. (2008), who found that although females often perceive more stress than males, males actually do have more stressors in their lives compared to females. Also, women often are better able to relieve their stress due to more adept coping behaviors such as talking with friends (Asberg et al., 2008). Thus, the stronger male response trend is supported by other literature; however, further research on the male response to stress is needed to test for significant gender differences.

Limitations in Interpretation

Some limitations emerged during the course of conducting this study. First, The Core Survey did not include an ID number question or a group database consent question for participants to respond to when completing the Core Survey. Because of this, the Core responses could not be linked to other ID numbers and responses from the other three surveys and, thus, could not be included in analyses.

Additionally, during the use of the International Physical Activity Questionnaire (IPAQ), a flaw was uncovered in the scoring of this survey. Directions to participants did not include how to answer four important questions for vigorous, moderate, light, and sitting exercise. The questions read: How much time did you usually spend doing (either

vigorous, moderate, light, or sitting) physical activities on one of those days? This was a follow-up question to how many days participants exercised in a typical week. Options to answer this question were: 1). _____hours per day, 2). _____minutes per day, 3). Don't know/unsure. Because of unclear directions, some participants answered the question by adding hours and minutes per day spent exercising, and some participants answered by reporting the same amount of activity for hours per day and minutes per day. One example would be: 1 hour per day; 60 minutes per day. If the answer was entered as the above example, the response was only recorded as minutes per day: 60. Although data were cleaned to get more clear and accurate results, it is still questionable as to the accuracy of the participant responses because of unclear directions on the IPAQ survey.

Because a convenience sample from five sections of Health and Human Behavior HED 1145 of participants was used to conduct this study, the study results may not be representative of the broader population of college students. The participants who enrolled in the five sections of HED 1145 may possess different characteristics than those who did not enroll in the five sections on those specific days and times. In future studies, a truly randomized sample of students could help enhance the potential for interpretation and increase resistance to internal threats.

Study participants were only allowed one time (Survey Day) to complete the four surveys. If the participants had been allowed to complete the four surveys at a later date in the semester, more significant results may have surfaced. Also, almost all of the surveys used have been adapted to a pretest-posttest study design, and thus, the study results could have been compared to those other pretest-posttest studies.

This study was conducted on only one college campus. This is a major limitation because students with specific characteristics choose to attend different universities. Because of the differences in characteristics, some of the study results could be due to chance of study participants. The same study conducted on another campus may have yielded more diverse results.

Conclusions

In conclusion, overall, this study provided four important results: a significant correlation between total stress and total self-esteem, a significant correlation between male stress and male self-esteem, a significant correlation between female stress and female self-esteem, and a lack of significant association between exercise and self-esteem or exercise and stress. Three findings are consistent with the greater portion of research of this kind conducted in college populations. College is a time when many individuals experience extreme stress due to academia, finances, new independence, and relationships. As students learn to have positive or negative coping mechanisms with stressful situations, they are developing life skills for their future and their new self as an independent person. If the individual is not able to develop adequate coping skills during stress, that person often experiences a decrease in his or her self-esteem. Both self-esteem and stress and psychometric variables and have often been negatively related in other current research studies, so it is not surprising or implausible that stress and self-esteem are negatively related in the study for total, females, and males. The study adds support to already current well known trends of stress and self-esteem within the college population.

Exercise was not significantly correlated with stress or significantly correlated with self-esteem. This is inconsistent with other current literature that has found a negative relationship between exercise and stress and a positive relationship between exercise and self-esteem. The main possible reason for the study results differing from other study results is that almost three fourths of the participants scored in the highest exercise category of over 3,000 MET-minutes per week. Because many of the participants had high exercise patterns, it may not have been possible to detect an association with another variable of stress or self-esteem because the scores were clustered together in a tight range. A more diverse population may yield different association results.

Although the other analyses did not provide statistically significant results for differences in male and female exercise, stress, or self-esteem scores, some noted trends that may be important when considering future research designs. The noted trend of slightly higher self-esteem scores among females, a trend that counters findings in other studies, may be of particular interest in future research. Follow-up studies on a larger sample and, perhaps, in comparison to comparable groups on other university campuses could result in more information about self-esteem among female college students in particular. In addition, measuring perceived stress levels at varying times in the semester could be useful in better understanding potential similarities and differences in perception patterns by gender.

Future Recommendations

This study provided a good basis for using valid and reliable college survey assessments to assess variable outcomes among college students. However, several

suggestions for improvements and other future research questions to pursue are discussed in the following paragraphs.

For future studies, including more demographic questions in each survey such as classification, ethnicity, marital status, living arrangements plus age and gender is encouraged. This way, these demographic variables could be included in statistical analyses to calculate regression analyses to test which demographic variables will predict the score for the survey health variables (exercise, stress, self-esteem).

In the future, additional studies similar to the descriptive surveys on the same campus and on different campuses around the United States using these same surveys in congruence would be helpful to not only test for differences among results for internal validity but also generalizability of results to other campuses and studies. Perhaps more studies that are more thorough and include more demographic and health variables would produce more statistical significances through analysis.

Also, a random sample and a larger sample of study participants would likely add validity to the study, reduce threats to the study, and provide a more diverse sample with more diverse characteristics. Results of the study could then be attributed less to any bias. Statistical analysis findings may be more consistent with current literature by using a more diverse population of participants in future studies.

The study did not include the SF-36 to assess college student quality of life, and based on previous research, quality of life during college varies quite dramatically and is related to other health variables. Adding this other variable may produce more significant results between males and females and relationships among all of the health variables.

Further, because of the high exercise scores of participants, the lack of diverse health characteristics of the participants in this study may have had an impact on the lack of significant associations detected for exercise and the other variables of stress and self-esteem. Including a more diverse population of participants in a future study may allow for detection of more significant associations between exercise and the other health variables.

Finally, because self-esteem results from this study were inconsistent with results from other current studies with men scoring lower on self-esteem than females, more research devoted to understanding whether the results for self-esteem in the study were due to chance or due to something more significant would be of interest.   More studies devoted to self-esteem among college individuals across the country would provide the answer to why some studies find self-esteem among females to be lower in comparison to males and other studies find self-esteem among males to be lower in comparison to females.

APPENDIX

Surveys and Flyers

An Invitation to Participate

Dear HED 1145 Student,

A team of health educators and researchers at Baylor University is interested in learning about the health and wellbeing of Baylor students and the factors that impact their quality of life. We are conducting a long-term research study to measure these factors among students so that we can use the information to:

- Enhance Baylor's health-related programs, services, and courses in ways that can positively impact the health and well-being of our students.
- Share what we learn with other health professionals who work to improve the health and wellbeing of college-aged adults in other locations.

We need your help!

As part of a required in-class learning activity, you will be asked to complete some surveys that you could use to personally explore your strengths and weaknesses in different health areas. This learning activity is designed to stimulate your thinking about how to create your goal for your course behavior enhancement project. You will NOT be required to include these surveys or your responses in your project notebook, but completing them is considered a valuable and useful part of your learning experience.

The surveys that you will complete for this activity are also being used in our study of health and quality of life among Baylor students. We wish to include your survey responses in our data base! But you can choose to give us that consent or not. Please note the details provided in the *Informed Consent Form* (see back side) about how we will honor your choice and protect your identity and confidentiality.

Please note! - You are required to come to class and complete the surveys as part of your class participation regardless of whether or not you check "yes" on the survey and allow us to use your responses in our study.

How this will work….

1. Your course instructor will assign to you a "Survey ID#" (see Informed Consent Form for details).
2. Write your assigned number in the space below (see *My Survey ID#*)
   MY SURVEY ID#_____
3. Bring this invitation form with you to class on the designated activity date (see table below).If you lose your number or forget the form, still come to class that day! We'll help you "get on track" when you arrive.
4. Follow the directions below for coming to class on the SURVEY DAY! Complete the surveys.
5. To receive your individual results of the online survey, email a request to Allison_Hubbs@baylor.edu and provide for her your "Survey ID#." She will email your responses to you. Copies of the surveys can be accessed through your course Blackboard account.

Where to go on Survey Day		
Section – Day - Time	Survey Date	Location
Section 06 – MW 10:10am Section 09 – MW 11:15am	January 25th - Monday	**Draper - Room 200** (Room 200 is a resource library. Enter and look to your left for the computer room.)
Section 22 – TR 9:30am Section 25 – TR 11:00am	January 26th - Tuesday	**Draper - Room 200** (Room 200 is a resource library. Enter and look to your left for the computer room)
Section 27 – TR 12:30pm	January 26th	**Moody Library – Room G32**

Informed Consent Form

1-Who are we and why are we here? We are the *BU-LiveWell* Team, a group of Baylor health professionals interested in learning about the health and wellbeing of Baylor students and the factors that impact their quality of life. If you have questions about this study, please contact: Dr. Eva Doyle, Baylor University, One Bear Place #97313, Waco, TX, 76798-7313, PH: (254) 710-4023, E-mail: Eva_Doyle@baylor.edu. For more information about your rights as a participant, please contact Dr. Michael E. Sherr, Chair, Baylor University IRB, One Bear Place #97320; Waco, TX 76798-7320; Phone: (254) 710-4483; Fax: (254) 710-6455; Email: Michael_Sherr@baylor.edu.

2-What are we asking you to do? The health-related surveys that you have been asked to complete for your HED 1145 Behavioral Enhancement Project are available in an online system. Completion of these surveys will take approximately 30-35 minutes. You will be guided by the research team to complete these surveys for project purposes during a designated class period of the course. You will receive this assistance even if you choose not to participate in the study. When you log onto the online system, instructions written there will prompt you to (a) read an online copy of this "informed consent message" and (b) check "yes" or "no" in response to the question "Do you agree to participate in our research study based on information provided in our Informed Consent Message?" Your response to this question will dictate whether your survey responses are used only by you in your course project notebook or, based on your consent, can also be included in our grouped responses (with no names attached) for use in this study.

3-Your identity will be protected from the researchers! Your course instructor will be given a set of *survey ID numbers* to be randomly assigned to students in his or her course sections. When you complete the online surveys, you will be prompted to enter your personal *survey ID number.* The online system will automatically generate a data file of all completed surveys with accompanying survey ID numbers and informed consent responses ("yes/no"). The research team will submit a list survey ID numbers to the course instructor as validation of survey completion (see #4 below). The team will then delete responses of those students who checked "no" in response to the informed consent question and replace survey ID numbers in the data set with a new set of randomly assigned participant numbers for use in data analysis. Thus, the researchers will not have access to actual student names and will not be able to track responses to individual students.

4-Your instructor will not know! For your course project grade, you *are* required to *participate* in the survey completion process. However, it is *your* decision whether or not we incorporate your responses into the *general* survey findings in the study database. It is also *your* decision whether or not to incorporate what you have learned from the surveys into your project notebook. You are *not* required to share actual survey responses or scores with your instructor, and online survey responses will not be sent to your instructor. Your instructor will only receive a list of *survey ID numbers* for completed surveys to validate that you completed the online surveys for use in the project. The instructor will *not* know whether you consented to study participation (allowed use of your responses in the study) and will not have access to your online survey responses.

5-What will we do with your answers? If you clicked "yes" to the informed consent prompt, we will include your responses in our database with those of other study participants. These grouped responses will be analyzed to identify total group and gender-specific patterns of self-reported exercise and alcohol use, perceived stress levels, self-esteem, and quality of life factors. This information will be used by our group to:

- Enhance Baylor's health-related programs, services, and courses in ways that can positively impact the health and well-being of our students.
- Share what we learn with other health professionals who work to improve the health and wellbeing of college-aged adults in other locations.

If you clicked "no" to the informed consent response, your responses will be deleted from the automatically-generated data based and will not be included in the study.

6-There are some small risks to you. You <u>may</u> become bored or feel uncomfortable about some questions on the survey. But, on each survey, you may choose to not answer a question or click the "I don't know" response. You will not be penalized in your course project grade for skipping questions or clicking "I don't know." The portion of your course grade assigned to this survey work is based on your demonstrated skills in self-assessment and is NOT based on your actual self-reported behavior or health status.

Perceived Stress Scale

These questions ask you about your feelings, thoughts, and activities during <u>the last month, including today</u>.

In the last month, how often have you:

1. Been upset because of something that happened unexpectedly?
   Never   0
   Almost Never   1
   Sometimes   2
   Fairly Often   3
   Very Often   4

2. Felt that you were unable to control important things in your life?
   Never   0
   Almost Never   1
   Sometimes   2
   Fairly Often   3
   Very Often   4

3. Felt nervous and "stressed"?
   Never   0
   Almost Never   1
   Sometimes   2
   Fairly Often   3
   Very Often   4

4. Felt confident about your ability to handle your personal problems?
   Never   0
   Almost Never   1
   Sometimes   2
   Fairly Often   3
   Very Often   4

5. Felt that things were going your way?
   Never   0
   Almost Never   1
   Sometimes   2
   Fairly Often   3
   Very Often   4

6. Found that you could not cope with all things you had to do?
   Never   0
   Almost Never   1
   Sometimes   2
   Fairly Often   3
   Very Often   4

7. Been able to control irritations in your life?
   Never   0
   Almost Never   1
   Sometimes   2
   Fairly Often   3
   Very Often   4

8. Felt that you were on top of things?
   Never   0
   Almost Never   1
   Sometimes   2
   Fairly Often   3
   Very Often   4

9. Been angered because of things that happened that were out of your control?
   Never   0
   Almost Never   1
   Sometimes   2
   Fairly Often   3
   Very Often   4

10. Felt difficulties were piling up so high that you could not overcome them?
    Never   0

Almost Never	1
Sometimes	2
Fairly Often	3
Very Often	4

INTERNATIONAL PHYSICAL ACTIVITY QUESTIONNAIRE

We are interested in finding out about the kinds of physical activities that people do as part of their everyday lives. The questions will ask you about the time you spent being physically active in the **last 7 days**. Please answer each question even if you do not consider yourself to be an active person. Please think about the activities you do at work, as part of your house and yard work, to get from place to place, and in your spare time for recreation, exercise or sport.

Think about all the **vigorous** activities that you did in the **last 7 days**. **Vigorous** physical activities refer to activities that take hard physical effort and make you breathe much harder than normal. Think *only* about those physical activities that you did for at least 10 minutes at a time.

1.   During the **last 7 days**, on how many days did you do **vigorous** physical activities like heavy lifting, digging, aerobics, or fast bicycling?

         _____ **days per week**

         ☐   No vigorous physical activities   ➡ *Skip to question 3*

2.   How much time did you usually spend doing **vigorous** physical activities on one of those days?

                 _____ **hours per day**

                 _____ **minutes per day**

         ☐   Don't know/Not sure

Think about all the **moderate** activities that you did in the **last 7 days**. **Moderate** activities refer to activities that take moderate physical effort and make you breathe somewhat harder than normal. Think only about those physical activities that you did for at least 10 minutes at a time.

3.   During the **last 7 days**, on how many days did you do **moderate** physical activities like carrying light loads, bicycling at a regular pace, or doubles tennis? Do not include walking.

         _____ **days per week**

         ☐

No moderate physical activities   ➡   *Skip to question 5*

4.   How much time did you usually spend doing **moderate** physical activities on one of those days?

      _____ **hours per day**

      _____ **minutes per day**

☐ Don't know/Not sure

Think about the time you spent **walking** in the **last 7 days**. This includes at work and at home, walking to travel from place to place, and any other walking that you might do solely for recreation, sport, exercise, or leisure.

5.   During the **last 7 days**, on how many days did you **walk** for at least 10 minutes at a time?

      _____ **days per week**

☐ No walking   ➡   *Skip to question 7*

6.   How much time did you usually spend **walking** on one of those days?

      _____ **hours per day**

      _____ **minutes per day**

☐ Don't know/Not sure

The last question is about the time you spent **sitting** on weekdays during the **last 7 days**. Include time spent at work, at home, while doing course work and during leisure time. This may include time spent sitting at a desk, visiting friends, reading, or sitting or lying down to watch television.

7.   During the **last 7 days**, how much time did you spend **sitting** on a **week day**?

      _____ **hours per day**

_____ minutes per day

☐ Don't know/Not sure

This is the end of the questionnaire, thank you for participating.

Rosenberg Self-Esteem Scale

Circle the appropriate number for each statement depending on whether you strongly agree, agree, disagree, or strongly disagree with it.

	Strongly agree Strongly disagree	Agree	Disagree
1- On the whole, I am satisfied with myself.	1 4	2	3
2- At times I think I am no good at all.	1 4	2	3
3- I feel that I have a number of good qualities.	1 4	2	3
4- I am able to do things as well as most other people.	1 4	2	3
5- I feel I do not have much to be proud of.	1 4	2	3
6- I certainly feel useless at times.	1 4	2	3
7- I feel that I'm a person of worth, at least on an equal plane with others.	1 4	2	3
8- I wish I could have more respect for myself.	1 4	2	3
9- All in all, I am inclined to feel that I am a failure.	1 4	2	3
10-I take a positive attitude toward myself.	1 4	2	3

Scoring
Sum the ratings assigned to all the items after reverse scoring the positively worded items. Scores range from 10 to 40, with higher scores indicating higher self-esteem.

Core Alcohol and Drug Survey

1). Classification:
Freshman
Sophomore
Junior
Senior
Grad/Professional
Not seeking a degree
Other

2). Age:
0-99

3). Ethnic Origin:
American Indian/Alaskan Native
Hispanic
Asian/Pacific Islander
White (non-Hispanic)
Black (non-Hispanic)
Other

4). Marital Status:
Single
Married
Separated
Divorced
Widowed

5). Gender:
Male
Female

6). Is your current residence as a student:
On-campus
Off-campus

7). Are you working?
Yes, full-time
Yes, part-time
No

8). Living Arrangements:
A. Where: (mark best answer)
House/apartment/etc.
Residence hall

Approved housing
Fraternity or sorority
Other
B. With whom: (mark all that apply)
With roommate(s)
Alone
With parent(s)
With spouse
With children
Other

9). Approximate cumulative grade point average:
A+
A
A-
B+
B
B-
C+
C
C-
D+
D
D-
F

10). Some students have indicated that alcohol or drug use at parties they attend in and around campus reduces their enjoyment, often leads to negative situations, and therefore, they would rather not have alcohol available and used. Other students have indicated that alcohol and drug use at parties increases their enjoyment, often leads to positive situations, and therefore, they would rather have alcohol and drugs available and used. Which of these is closest to your own view?
With regard to drugs:
Have available
Not have available
With regard to alcohol:
Have available
Not have available

11). Student Status:
Full-time (12+ credits)
Part-time (1-11 credits)

12). Campus situation on alcohol and drugs:
a. Does your campus have alcohol and drug policies
Yes

No
Don't know
b. If so, are they enforced?
Yes
No
Don't know
c. Does your campus have a drug and alcohol prevention program?
Yes
No
Don't know
d. Do you believe your campus is concerned about the prevention of drug and alcohol use?
Yes
No
Don't know
e. Are you actively involved in efforts to prevent drug and alcohol use problems on your campus?
Yes
No

13). Place of permanent residence:
In-state
USA, but out of state
Country other than USA

14). Think back over the last two weeks. How many times have you had five or more drinks at a sitting? (A drink is a bottle of beer, a glass of wine, a wine cooler, a shot glass of liquor, or a mixed drink).
None
Once
Twice
3 to 5 times
6 to 9 times
10 or more times

15). Average number of drinks you consume a week:
0 to 99

16). At what age did you first use…(mark one for each line)
a. Tobacco (smoke, chew, snuff)
Did not use
Under 10
10-11
12-13
14-15
16-17

18-20
21-25
26+
b. Alcohol (beer, wine, liquor) (other than a few sips)
Did not use
Under 10
10-11
12-13
14-15
16-17
18-20
21-25
26+
c. Marijuana (pot, hash, hash oil)
Did not use
Under 10
10-11
12-13
14-15
16-17
18-20
21-25
26+
d. Cocaine (crack, rock, freebase)
Did not use
Under 10
10-11
12-13
14-15
16-17
18-20
21-25
26+
e. Amphetamines (diet pills, speed)
 Did not use
Under 10
10-11
12-13
14-15
16-17
18-20
21-25
26+
f. Sedatives (downers, ludes)
Did not use
Under 10

10-11
12-13
14-15
16-17
18-20
21-25
26+
g. Hallucinogens (LSD, PCP)
Did not use
Under 10
10-11
12-13
14-15
16-17
18-20
21-25
26+
h. Opiates (heroin, smack, horse)
Did not use
Under 10
10-11
12-13
14-15
16-17
18-20
21-25
26+
i.Inhalants (glue, solvents, gas)
Did not use
Under 10
10-11
12-13
14-15
16-17
18-20
21-25
26+
j. Designer drugs (ecstasy, MDMA)
Did not use
Under 10
10-11
12-13
14-15
16-17
18-20
21-25

26+
k. Steroids
Did not use
Under 10
10-11
12-13
14-15
16-17
18-20
21-25
26+
l. Other illegal drugs
Did not use
Under 10
10-11
12-13
14-15
16-17
18-20
21-25
26+

17). Within the last year, about how often have you used…(mark one for each line)
a. Tobacco (smoke, chew, snuff)
Did not use
Once/year
6 times/year
Once/month
Twice/month
Once/week
3 times/week
5 times/week
Every day
b. Alcohol (beer, wine, liquor)
Did not use
Once/year
6 times/year
Once/month
Twice/month
Once/week
3 times/week
5 times/week
Every day
c. Marijuana (pot, hash, hash oil)
Did not use
Once/year

6 times/year
Once/month
Twice/month
Once/week
3 times/week
5 times/week
Every day
d. Cocaine (crack, rock, freebase)
Did not use
Once/year
6 times/year
Once/month
Twice/month
Once/week
3 times/week
5 times/week
Every day
e. Amphetamines (diet pills, speed)
Did not use
Once/year
6 times/year
Once/month
Twice/month
Once/week
3 times/week
5 times/week
Every day
f. Sedatives (downers, ludes)
Did not use
Once/year
6 times/year
Once/month
Twice/month
Once/week
3 times/week
5 times/week
Every day
g. Hallucinogens (LSD, PCP)
Did not use
Once/year
6 times/year
Once/month
Twice/month
Once/week
3 times/week
5 times/week

Every day

h. Opiates (heroin, smack, horse)

Did not use

Once/year

6 times/year

Once/month

Twice/month

Once/week

3 times/week

5 times/week

Every day

i.Inhalants (glue, solvents, gas)

Did not use

Once/year

6 times/year

Once/month

Twice/month

Once/week

3 times/week

5 times/week

Every day

j. Designer drugs (ecstasy, MDMA)

Did not use

Once/year

6 times/year

Once/month

Twice/month

Once/week

3 times/week

5 times/week

Every day

k. Steroids

Did not use

Once/year

6 times/year

Once/month

Twice/month

Once/week

3 times/week

5 times/week

Every day

l. Other illegal drugs

Did not use

Once/year

6 times/year

Once/month

Twice/month
Once/week
3 times/week
5 times/week
Every day

18). During the past 30 days, on how many days did you have: (mark one for each line)
a. Tobacco (smoke, chew, snuff)
0 days
1-2 days
3-5 days
6-9 days
10-19 days
20-29 days
All 30 days
b. Alcohol (beer, wine, liquor)
0 days
1-2 days
3-5 days
6-9 days
10-19 days
20-29 days
All 30 days
c. Marijuana (pot, hash, hash oil)
0 days
1-2 days
3-5 days
6-9 days
10-19 days
20-29 days
All 30 days
d. Cocaine (crack, rock, freebase)
0 days
1-2 days
3-5 days
6-9 days
10-19 days
20-29 days
All 30 days
e. Amphetamines (diet pills, speed)
0 days
1-2 days
3-5 days
6-9 days
10-19 days
20-29 days

All 30 days
f. Sedatives (downers, ludes)
0 days
1-2 days
3-5 days
6-9 days
10-19 days
20-29 days
All 30 days
g. Hallucinogens (LSD, PCP)
0 days
1-2 days
3-5 days
6-9 days
10-19 days
20-29 days
All 30 days
h. Opiates (heroin, smack, horse)
0 days
1-2 days
3-5 days
6-9 days
10-19 days
20-29 days
All 30 days
i.Inhalants (glue, solvents, gas)
0 days
1-2 days
3-5 days
6-9 days
10-19 days
20-29 days
All 30 days
j. Designer drugs (ecstasy, MDMA)
0 days
1-2 days
3-5 days
6-9 days
10-19 days
20-29 days
All 30 days
k. Steroids
0 days
1-2 days
3-5 days
6-9 days

10-19 days
20-29 days
All 30 days
l. Other illegal drugs
0 days
1-2 days
3-5 days
6-9 days
10-19 days
20-29 days
All 30 days

19). How often do you think the average student on campus uses…(mark one for each line)
a. Tobacco (smoke, chew, snuff)
Never
Once/year
6 times/year
Once/month
Twice/month
Once/week
3 times/week
5 times/week
Every day
b. Alcohol (beer, wine, liquor)
Never
Once/year
6 times/year
Once/month
Twice/month
Once/week
3 times/week
5 times/week
Every day
c. Marijuana (pot, hash, hash oil)
Never
Once/year
6 times/year
Once/month
Twice/month
Once/week
3 times/week
5 times/week
Every day
d. Cocaine (crack, rock, freebase)
Never

Once/year
6 times/year
Once/month
Twice/month
Once/week
3 times/week
5 times/week
Every day
e. Amphetamines (diet pills, speed)
Never
Once/year
6 times/year
Once/month
Twice/month
Once/week
3 times/week
5 times/week
Every day
f. Sedatives (downers, ludes)
Never
Once/year
6 times/year
Once/month
Twice/month
Once/week
3 times/week
5 times/week
Every day
g. Hallucinogens (LSD, PCP)
Never
Once/year
6 times/year
Once/month
Twice/month
Once/week
3 times/week
5 times/week
Every day
h. Opiates (heroin, smack, horse)
Never
Once/year
6 times/year
Once/month
Twice/month
Once/week
3 times/week

5 times/week
Every day
i.Inhalants (glue, solvents, gas)
Never
Once/year
6 times/year
Once/month
Twice/month
Once/week
3 times/week
5 times/week
Every day
j. Designer drugs (ecstasy, MDMA)
Never
Once/year
6 times/year
Once/month
Twice/month
Once/week
3 times/week
5 times/week
Every day
k. Steroids
Never
Once/year
6 times/year
Once/month
Twice/month
Once/week
3 times/week
5 times/week
Every day
l. Other illegal drugs
Never
Once/year
6 times/year
Once/month
Twice/month
Once/week
3 times/week
5 times/week
Every day

20). Where have you used…(mark all that apply)
a. Tobacco (smoke, chew, snuff)
Never used

On campus events
Residence hall
Frat/sorority
Bar/restaurant
Where you live
In a car
Private parties
Other
b. Alcohol (beer, wine, liquor)
Never used
On campus events
Residence hall
Frat/sorority
Bar/restaurant
Where you live
In a car
Private parties
Other
c. Marijuana (pot, hash, hash oil)
Never used
On campus events
Residence hall
Frat/sorority
Bar/restaurant
Where you live
In a car
Private parties
Other
d. Cocaine (crack, rock, freebase)
Never used
On campus events
Residence hall
Frat/sorority
Bar/restaurant
Where you live
In a car
Private parties
Other
e. Amphetamines (diet pills, speed)
Never used
On campus events
Residence hall
Frat/sorority
Bar/restaurant
Where you live
In a car

Private parties
Other
f. Sedatives (downers, ludes)
Never used
On campus events
Residence hall
Frat/sorority
Bar/restaurant
Where you live
In a car
Private parties
Other
g. Hallucinogens (LSD, PCP)
Never used
On campus events
Residence hall
Frat/sorority
Bar/restaurant
Where you live
In a car
Private parties
Other
h. Opiates (heroin, smack, horse)
Never used
On campus events
Residence hall
Frat/sorority
Bar/restaurant
Where you live
In a car
Private parties
Other
i.Inhalants (glue, solvents, gas)
Never used
On campus events
Residence hall
Frat/sorority
Bar/restaurant
Where you live
In a car
Private parties
Other
j. Designer drugs (ecstasy, MDMA)
Never used
On campus events
Residence hall

Frat/sorority
Bar/restaurant
Where you live
In a car
Private parties
Other
k. Steroids
Never used
On campus events
Residence hall
Frat/sorority
Bar/restaurant
Where you live
In a car
Private parties
Other
l. Other illegal drugs
Never used
On campus events
Residence hall
Frat/sorority
Bar/restaurant
Where you live
In a car
Private parties
Other

21). Please indicate how often you have experienced the following due to your drinking or drug use during the last year…(mark one for each line)
a. Had a hangover
Never
Once
Twice
3-5 times
6-9 times
10 or more times
b. Performed poorly on a test or important project
Never
Once
Twice
3-5 times
6-9 times
10 or more times
c. Been in trouble with police, residence hall, or other college authorities
Never
Once

Twice
3-5 times
6-9 times
10 or more times
d. Damaged property, pulled fire alarm, etc.
Never
Once
Twice
3-5 times
6-9 times
10 or more times
e. Got into an argument or fight
Never
Once
Twice
3-5 times
6-9 times
10 or more times
f. Got nauseated or vomited
Never
Once
Twice
3-5 times
6-9 times
10 or more times
g. Driven a car while under the influence
Never
Once
Twice
3-5 times
6-9 times
10 or more times
h. Missed a class
Never
Once
Twice
3-5 times
6-9 times
10 or more times
i.Been critized by someone
Never
Once
Twice
3-5 times
6-9 times
10 or more times

j. Thought I might have a drinking or other drug problem
Never
Once
Twice
3-5 times
6-9 times
10 or more times
k. Had a memory loss
Never
Once
Twice
3-5 times
6-9 times
10 or more times
l. Done something I later regretted
Never
Once
Twice
3-5 times
6-9 times
10 or more times
m. Been arrested for DWI/DUI
Never
Once
Twice
3-5 times
6-9 times
10 or more times
n. Have been taken advantage of sexually
Never
Once
Twice
3-5 times
6-9 times
10 or more times
o. Have taken advantage of another sexually
Never
Once
Twice
3-5 times
6-9 times
10 or more times
p. Tried unsuccessfully to stop using
Never
Once
Twice

3-5 times
6-9 times
10 or more times
q. Seriously thought about suicide
Never
Once
Twice
3-5 times
6-9 times
10 or more times
r. Seriously tried to commit suicide
Never
Once
Twice
3-5 times
6-9 times
10 or more times
s. Been hurt or injured
Never
Once
Twice
3-5 times
6-9 times
10 or more times

22). Have any of your family had alcohol or other drug problems: (mark all that apply)
Mother
Father
Stepmother
Stepfather
Brothers/sisters
Mother's parents
Father's parents
Aunts/uncles
Spouse
Children
None

23). If you volunteer any of your time on or off campus to help others, please indicate the approximate number of hours per month and principal activity:
Don't volunteer, or less than one hour
1-4 hours
5-9 hours
10-15 hours
16 or more hours
Principal volunteer activity is: _____

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