Stress and Health in College Students

Honors Research Thesis

Presented in partial fulfillment of the requirements for graduation *with honors research distinction* in Psychology in the undergraduate colleges of The Ohio State University

by

Gretchen Fogle

The Ohio State University

May 2012

Project Advisor: Professor Terry Pettijohn, Department of Psychology

Abstract

Research has demonstrated that college students experience stress from sources such as poor self-care habits, educational demands, daily hassles, and perceived control over stressful situations. The present study examined perceived stress, health habits, and daily hassles and uplifts among 135 college freshmen. We hypothesized that students with lower stress levels would be male, would have better self-care habits, would experience fewer minor medical health issues, would have significantly higher academic performance, and would experience fewer daily hassles and more daily uplifts than students who experienced high perceived stress. Strong support was obtained for the hypothesis that students with low perceived stress had better health habits. Students with low perceived stress also experienced significantly fewer hassles and more uplifts per month. There were not any significant effects of perceived stress on grade point average, minor medical issues, or gender. The results could help college freshmen adjust to challenges of college by helping them understand some of the effects of stress and benefits of reducing that stress.

Stress and Health in College Students

College students often experience stress from a variety of sources, including poor self-care habits, educational demands, daily hassles, and perceived control over stressful situations. These variables can affect students' academic performance and personal well-being.

Students and stress. We examined three articles on stress in students. Garrard and Brumby (1985) demonstrated that students perceive stress in varying ways. They gave high school and university students open-ended questionnaires in which they were asked to explain the ways they perceived the stress in their lives. While the majority of students surveyed mentioned negative associations with stress, 15% of the college students mentioned that having a small amount of stress in one's life is beneficial, and 20% of high school students reported having no stress other than small, everyday hassles. This result may be due to individual differences in what the students perceived as stress rather than to a difference in the students' actual level of stress. For example, an experience one student perceives as a great obstacle may be perceived as a fun challenge by a different student. Stress in students often depends on how well they are able to cope with educational demands.

Ragsdale, Beehr, Grebner and Han (2011) hypothesized that students experience a period of stress during the week and a period of recovery over the weekend. Three types of recovery activities were addressed: physical activities, social activities, and low-energy activities such as reading a book or watching a movie. Students find these types of activities enjoyable because they help the students to maintain an equilibrium of stress and relaxation. Physical activities keep the student's body healthy, social activities give

the students a feeling of support, and low-energy activities provide the student with rest. Undergraduates from a small Midwestern university were tested on their well-being after a weekend of recovery activities. Students who engaged in more weekend recovery activities than students who used weekends to perform stressful tasks such as homework reported better well-being on Mondays.

Siddique and D'Arcy (1984) studied the relationship between stress and psychological well being in a study of Canadian adolescents who were 14-17 years of age. The adolescents' social stress, life satisfaction, psychological satisfaction, and locus of control orientation were measured. The results gave evidence that an internal locus of control acts as a buffer in stressful peer situations, but not in family situations. Family dysfunction caused stress in adolescents regardless of locus of control orientation. It is suggested that family problems cause more stress because the adolescents are dependent upon their families.

Health habits. Students' health habits are related to their perceived level of stress. We examined four articles on various health habits. Lund, Reider, Whiting and Prichard (2010) studied sleep and stress in students ages 17-25. Scales used included The Profile of Mood States, The Subjective Units of Distress Scale, and various inventories measuring sleep quality. Results suggested that perceived stress was related to poor sleep quality. In fact, perceived stress ranked higher than caffeine, alcohol, and exercise in predicting decreased quality of a participant's sleep. The self-report method used in this study differentiated poor quality sleep from good quality sleep by noting the number of times participants performed actions such as waking up in the night, experiencing nightmares, and taking sleeping medicine to help them rest. One explanation for the

results of this study is that young adults in college may not yet have developed proper coping mechanisms to handle stress, so they have more frequent issues with rumination and worry. This in turn interferes with their sleep.

Ruthig, Marrone, Hladkyj, and Robinson-Epp (2011) studied the relationship between health behaviors and academic performance in a sample of 203 college students. Students were tested both at the beginning of the school year at their highest point of transitional stress and at the end of the school year after they had sufficient time to adjust to their situation. Women reported greater stress and poorer self-care habits than men at the beginning of the fall semester. The researchers suggested that the gender difference existed because it is considered less socially acceptable for men to report stress than it is for women. As the school year progressed, women were more likely to engage in exercise than they had been at the beginning of the year. Exercise correlated positively with women's overall amount of perceived success, suggesting a relationship between a woman's exercise habits and her life satisfaction. Conversely, high amounts of binge drinking correlated with women's poorer academic performance and perceived stress. Although men consumed greater quantities of alcohol than women, they reported fewer negative consequences of alcohol use. The suggested reason for this is that women perceive alcohol as a greater threat to their performance and are more likely to experience adverse results from abusing it. Both gender groups reported a decrease in stress as the school year progressed, perhaps from adjusting to the pressures of classes and living away from home.

Healthy eating is also related to stress in college students, as demonstrated by Oliver and Wardle (1999). The majority of students who participated in this study, both

males and females, dieters and non-dieters, reported snacking behavior under stress and a decrease in their intake of "meal foods." The explanation given for this was that people are more likely to choose energy-dense foods than non energy-dense foods when they are stressed. The students were also questioned about the amounts of food that they ate under stress. Roughly half stated that they ate less than usual under stress and the other half stated that they ate more than usual.

Brown (1991) studied the relationship between stress and exercise habits. The data were collected from university students and the study was performed primarily to address the limitations of other studies that relied exclusively on self-report. While the participants in this study still gave self-reports, their physical fitness was tested by using bicycles and their university health center records were released to the researcher. This gave Brown both subjective and objective measures to use in finding the relationship between the two factors. The number of life stresses was strongly related to frequent health center visits, while stress had minimal impact on participants in good physical health. One precaution that must be taken when examining this data is that infrequent visits to the clinic may not necessarily equate to good health. It may simply mean that the person does not visit the clinic when he or she is ill.

Stress and health issues. Students' stress levels can impact their health. We examined seven articles on the relation between stress and health issues. DeLongis, Coyne, Dakof, Folkman and Lazarus (1982) studied the relationship of daily hassles and major life events to energy level and the frequency and intensity of somatic symptoms (i.e., health issues). They discovered only a weak relationship between major life events and somatic symptoms, and significance was found only with events that occurred 1-3

years before testing. This suggests a time lag in the effect of negative life events on a person's health and also provides evidence that this effect on health dissipates over time. Hassles, however, were significantly positively correlated with energy level, and both frequencies and intensities of hassles were correlated with illness. This supported the researchers' hypothesis that daily hassles are more positively correlated with stress than major life events.

Benham (2006) hypothesized a link between physical and somatic symptoms and sensitivity to environmental processing. In this study, environmental processing was measured by The Highly Sensitive Person Scale, which presented participants with questions about a variety of different types of sensitivity ranging from appreciation of art and music to the tendency to be overwhelmed by pain or strong sensory input. Females scored significantly higher on sensitivity to environmental stimuli than did males, and a similar, non-significant trend was observed for health and illness. The results of the study suggested that sensitivity to environmental stimuli is a better indicator of physical pain than perceived life stress.

Manning and Fusilier (1999) studied buffers as a means of lessening negative health symptoms potentially caused by stress. A buffer is defined as a personal characteristic that prevents adverse consequences. Buffers in this study included hardiness, exercise, and social support. They wanted to determine which of these buffers, if any, were correlated with the extent to which individuals seek healthcare. They discovered that higher levels of hardiness were correlated with lower levels of illness. Additionally, those with higher levels of social support sought medical attention more often, presumably because they were encouraged to do so by their social support circles.

Holahan and Moos (1985) measured factors that buffer the negative effects of stress on physical health. They hypothesized that individuals who experienced less adverse effects of stress would be more self-confident and easy-going, more likely to engage in healthy coping behaviors, and more likely to have high levels of family support. More emphasis was placed on the relationship between personal distress and negative events than between personal distress and life changes in general. The middle 25% of participants' results were removed in order to create two clearly defined groups: distressed and stress resistant. The distressed group experienced high stress and high distress in their lives. The stress resistant group also experienced high stress but reported low levels of distress. As hypothesized, personality, methods of coping, and family support all correlated significantly with levels of both physical and emotional well-being. In general, men classified as stress-resistant reported more easy-going personalities, while women in the stress-resistant category reported more family support.

Dua (1994) performed a study to determine the levels of job-related stress experienced by staff at a university and the extent this stress played a role in physical and emotional health. Stressors were defined as objective events, stress as the subjective experience of those events, and strain as the maladaptive response to those events. Some examples of strain are poor emotional health which manifests in symptoms such as depression and anxiety, poor physical health which manifests in heart disease, insomnia, headaches, and infection, and organizational symptoms which often manifest as poor work quality. A 21-item job stressors table constructed by Dua was given to these participants to measure their stress in the workplace, and emotional health was measured by Nowak's Psychological Distress Scale, the Manifest Anxiety Scale, and the Thought

Related Distress Subscale of the Thoughts and Real-Life Experiences Scale. Physical health was measured by a self-report and a tally of the participant's total absences from work due to a medical problem within the past three months. Results showed that younger staff experienced more stressors than older staff, possibly due to lack of experience in the workplace. All staff experiencing work-related stress, regardless of their ages, were more likely to experience increased job dissatisfaction, worse physical health, and more absences from work due to health issues.

Aanes, Mittelmark, and Hetland (2010) explored the relationship between loneliness and physical health symptoms. They argued that loneliness occurs when mutually caring relationships and frequent positive interactions within those relationships have not been perceived as attained by the lonely individual. Symptom perception theory states that environmental and psychological factors interact with bodily cues to create perceived physical or somatic symptoms. A somatic symptom is defined as an adversely perceived internal state that has no underlying physical or psychological pathology behind it and is not a sign of illness. The hypothesis in this study was that loneliness mediates a link between interpersonal stress and somatic symptoms. Results from men and women in Western Norway demonstrated that 75% of the effect in depressive symptoms was mediated by loneliness. Loneliness was also responsible for mediating just over 40% of the effect in somatic symptoms.

DeLongis, Folkman, and Lazarus (1988) indicated that unsupportive social relationships and low self-esteem were two of the greatest stresses that predicted somatic problems on stressful days. Also, a more stressful day predicted *poorer* physical health on the day in which the stress occurred, but actually predicted a *better* mental state on the

following day. The better mental state was attributed to the relief that comes after stress subsides.

       Personality factors. Perception of stress is shaped by personality factors such as optimism and perceived level of control over a situation. We examined seven articles on personality factors. Von Ah, Ebert, Ngamvitroj, Park, and Kang (2004) examined the impact of perceived stress, availability of and satisfaction with social support, and self-efficacy on health behaviors in college students. They suggested that changes in health behavior are mediated by the perceived susceptibility and the perceived effectiveness of the change in behavior. Therefore, an individual must believe that a healthy behavior is making a difference in order to keep participating in the health behavior. The health behaviors studied were as follows: alcohol usage and smoking behavior, physical activity and nutrition behavior, general safety behavior, and sun protective behavior. Self-efficacy was the strongest predictor of good health behaviors and had a positive influence on each of the factors studied except for smoking. The exception of smoking might be explained by the evidence that two-thirds of students who smoked believed they would quit sometime in the future. Perceived stress was not significantly related to health habits in this study.

       Gillham, Shatte, Reivich, and Seligman (2001) studied the impact of explanatory style on various life arenas, including physical health. Explanatory style is a way of referring to the nature of a person's optimism, or expectancy that an outcome will be positive. Optimists attribute negative circumstances to external, unstable, specific events. In other words, they believe that adversity is primarily caused by the environment, by circumstances that will soon change, and by factors that only affect a limited domain of

their lives. Gillham et al. believed that improving one's explanatory style might have a positive effect upon physical health.

Roddenberry and Renk (2010) noted self-efficacy and locus of control as mediators of stress, illness, and utilization of student health services in college students. People who believe that they have little control over the events in their life might react more intensely to stress, causing them to become ill more often. Roddenberry and Renk found a relationship between a higher level of general self-efficacy and greater overall health, as well as a relationship between a high level of academic self-efficacy and a high level of psychological well-being. In general those who had high levels of stress also had low self-efficacy, high external locus of control, and high levels of illness.

Scheirer and Carver (1985) developed the Life Orientation Test (LOT), which measures an individual's dispositional optimism. Individuals who have a more positive outlook on life are likely to handle stress better than those who have a negative outlook, so measuring participants' optimism provides insight into their coping skills. The LOT was administered to several groups of undergraduate students who were tested four weeks before the end of the semester and again on the last day of class. The results of men and women were scored separately to establish norms for each group. In both groups, the participants who scored higher on optimism had higher self-esteem and a more internal locus of control.

Folkman, Lazarus, Gruen, and DeLongis (1986) studied the impact of appraisal and coping on long-term adaptational status, including a measure of somatic symptoms in participants. Cognitive appraisal is the extent to which a person appraises a circumstance to be relevant to his or her well-being, while coping refers to a person's efforts to master

demands in the environment. Adaptational status was measured by psychological symptoms and somatic symptoms, the latter referring to the state of a person's physical health. Results showed a trend that the more coping a person engaged in, the poorer his or her health was. It was suggested that not all coping is adaptive, and maladaptive coping such as cigarette smoking and alcohol can affect health. Results for cognitive appraisal suggested that the more mastery a person perceived over a situation, the better his or her health was.

Ilgen and Hutchinson (2005) hypothesized that clinically depressed individuals may have a predisposition to perceive more stress than those are not depressed. 62 volunteers, half with a history of major depressive disorder and half without a history of major depressive disorder, were paid $35 each to participate in this study. They were screened to ensure no other psychological conditions existed and no current depressive episodes were taking place, after which they were randomly assigned to either a high stress condition or a low stress condition. The low-stress condition involved providing numerical answers to turn a screen from red to white. In the high-stress condition, the participants were unaware that no numerical answer would change the screen color from red to white, and they were also exposed to an aversive noise during the experiment. People with a history of MDD tended to decrease their performance on tasks that seemed out of their control, while performance increased in people without a history of MDD. This suggests a heightened vulnerability to even minor life stressors in people with a history of MDD.

Ciarrochi, Deane, and Anderson (2002) hypothesized that emotional intelligence (EI) moderates the relationship between stress and three mental health variables:

depression, hopelessness, and suicidal ideation. 302 Australian university students were given an objective emotion perception test, or "stories test" in which they were asked to identify the emotions associated with various short stories. They were also surveyed about emotional intelligence, depression, life satisfaction, and daily hassles. Results indicated that emotional perception is the most important factor in determining depression and suicidal ideation. The emotional perception variable appeared to be independent of stress and health, suggesting a relation to personality rather than social and environmental factors. Emotional intelligence measures showed little evidence of being correlated with mental health and stress measures, but people with higher emotional intelligence scores did show decreased depression, hopelessness, and suicidal ideation rates. Because emotional intelligence involves interacting with others and forming more friendships than is typical of a person with lower emotional intelligence, it is thought that these social relationships buffer the emotionally intelligent person during stressful times.

The Current Study

In the present study, we examined five hypotheses on stress and self-care health habits in first-year college students.

Hypothesis one stated that male students would experience less stress than female students. While both genders experience stress, females have to deal with a unique set of societal and personal expectations that might cause them to experience more stress.

Hypothesis two stated that students who experienced low levels of perceived stress would have better self-care habits than those who experience high levels of perceived stress. Students who have taken care of their basic needs are equipped to

handle stress better.

Hypothesis three stated that students with lower stress levels would experience fewer minor medical health issues. The reasoning behind this is that the body will have more energy to expend when it is not busy reacting to stress.

Hypothesis four stated that students with lower stress levels would report significantly higher academic performance. These students might be better at coping with stress and not allowing it to affect their schoolwork.

Hypothesis five stated that students with low stress levels would experience fewer daily hassles and more daily uplifts. Daily hassles can negatively affect a student's focus and attitude, while daily uplifts may improve his or her overall performance.

One hundred thirty-five college students were given a variety of short personality scales that measured stress, health, and related factors. Overall stress was determined by Cohen, Kamarck and Mermelstein's (1983) 14-item Perceived Stress Scale. This scale contained questions about the participant's life satisfaction and coping skills, thereby measuring stress and the intensity of its consequences. Health habits were measured by an 18-item scale we created for this study. It was divided into three sections: eating habits, exercise habits, and time management and relaxation. A self-report of the frequency and intensity of any medical symptoms the participant experienced was included. These questions were non-intrusive and referred to mild issues such as headaches and stomachaches. Participants were also given an 18-item health locus of control scale (Wallston, Wallston, & DeVellis, 1978), a brief Big 5 personality scale (Gosling, Rentfrow & Swann, 2003), and a scale that measured daily hassles and uplifts (Kanner, Coyne, Schaefer & Lazarus, 1981).

Methods

Participants

The research recruited students from the introductory psychology human participant research pool on the Marion Campus of The Ohio State University. The participants were asked to fill out a number of surveys that measured their perceived stress level, self-care health habits, and personality variables related to stress and health. No identifying information was requested and there was no additional screening of participants.

Seventy-five (55.6%) of the participants identified themselves as female and 60 (44.4%) identified themselves as male.

Ninety-one (67.4%) students identified themselves as freshmen, 33 (24.4%) identified themselves as sophomores, 3 (2.2%) identified themselves as juniors, 2 (1.5%) identified themselves as seniors, and 6 (4.4%) identified themselves as another rank not listed.

The mean age of the participants was 20.02 years. The majority of the students were between the ages of 18 and 20 years. The range was 18-47 years. Fifty-nine (44.4%) of the participants were 18 years old, 30 (22.6%) were 19 years old, and 19 (14.3%) were 20 years old.

Twenty-three (17.0%) of the participants were African American, and 96 (71.1%) of the participants were Caucasian. In addition, 2 (1.5%) identified themselves as Latin American, 5 (3.7%) as Asian American, 2 (1.5%) as Native American, and 13 (9.6%) as another ethnicity not listed.

Eighty-eight (65.2%) of participants identified themselves as single, 29 (21.5%) identified themselves as being in a long-term relationship, 6 (4.4%) identified themselves as engaged, 0 (0%) identified themselves as divorced, 1 (0.7%) identified himself or herself as separated, and 6 (4.4%) identified themselves as being partnered.

Measures

The Perceived Stress Scale (Cohen, Kamarck & Mermelstein, 1983) is a 14-item scale developed to provide an objective measurement of individuals' perceptions of stressful events. Reasons why such a measurement is useful include the simplicity of the questioning procedure, the lack of subjective bias, and the potential for an estimate of which events could be identified with increased risk of disease. It is an appropriate instrument for the current study because it is a valid self-report that conveys how much stress a student believes himself or herself to be under. The PSS contains seven positive (reverse-scored) questions and seven negative questions regarding stress. Those scores are then added together to obtain the participants numeric perceived stress score. Cohen et al. provided validation data from two groups of college students and one group from a community population in a smoking-cessation program. The test-retest consistency of the PSS was measured by retesting the college students after a two-day interval and the community participants after six weeks. The PSS was found to have both high internal validity and test-retest consistency.

Wallston, Wallston, and DeVellis (1978) created the Multidimensional Health Locus Of Control Scale (MHLOC) in order to more specifically measure attributions for physical health and illness. The MHLOC measures the sources of reinforcement for health related behaviors, including internal (I) sources, chance (C) variables, and being

under the control of powerful others (P). This scale has shown good reliability and validity (Wallston, 2005).

Gosling, Rentfrow and Swann (2003) developed a very brief Big Five Personality scale, the Ten Item Personality Inventory (TIPI), in response to a need for a less time-consuming alternative to the original version to use in situations where a long scale might not be possible. Unlike the long scale, which asks in-depth questions about an individual's preferences, the short scale outright asks whether or not the person possesses certain traits that correlate with extraversion, openness, agreeableness, conscientiousness, and emotional stability. The researchers' goals in developing this scale were breadth of coverage and non-redundant, non-extreme items that covered both dichotomies of the personality trait in question. They gave groups of college students, as well as two sub-groups within the first group, the Big Five as well as a variety of other scales that ruled out external correlates. Participants were tested after a two week interval to verify test-retest reliability. The TIPI scale was found to have good reliability and validity.

Kanner, Coyne, Schaefer and Lazarus (1981) claimed that small hassles encountered in daily life are just as important in research as major life events. Hassles are defined as annoyances that are not major but still have an effect on a person's daily life. The flip side to hassles are uplifts: small, pleasurable events that make one's day better. It is hypothesized that hassles and uplifts work together to affect a person's mood and attitudes, and both should be studied together. This is relevant to the current study because hassles are causes of stress, and uplifts could be stress relievers. The researchers gave the Hassles and Uplifts Scale to a group of participants once a month for ten consecutive months. The groups showed "themes" of most frequently encountered

hassles (and in some cases, uplifts) according to demographics such as age. A life events scale was administered with the daily hassles scale, and evidence was found that daily hassles tend to have more impact on a person than major life events.

Procedure

The participants were given an online survey and asked to provide honest responses to the questions. All of the questions were closed, which means that students were asked to provide the best option from among choices (for example Strongly Agree to Strongly Disagree). Students were compensated for their participation with a research credit that fulfilled a requirement for introductory psychology classes. Participants were only tested once during the research study, and there was not a follow-up session.

Results

The Perceived Stress Scale (Cohen et al., 1983) was used to obtain a measure of stress experienced by students. A high stress group of 43 students with a mean perceived stress score of 34.32 ($SD = 4.30$) was created from the top one-third of students' scores on the perceived stress scale, and a low stress group of 44 students with a mean perceived stress score of 18.60 ($SD = 4.52$) was created from the bottom one-third of students' scores. A t-test for the scores of the high perceived stress students and the low perceived stress students showed this split produced a highly significant difference, $t(85) = -16.62$, $p < .001$. The low stress group scores ranged from 7 to 24, and the high stress group scores ranged from 30 to 48. PSS scores could range from 0 to 56. These two groups were used to test hypotheses on high versus low stress in students.

For each analysis, N is the number of students who answered all questions. Some

students who answered the surveys only provided answers for some of the questions and thus were excluded from that particular analysis.

Hypothesis 1: Perceived stress and gender. The first hypothesis stated that males would experience less perceived stress than females. This might be due to environmental conditioning and different societal pressures between genders. $N = 121$ participants (57 males and 64 females) were used to test hypothesis 1. The results of the t-test on the perceived stress scale and gender, t (119) = 1.52, $p = .13$, did not support this hypothesis. The mean perceived stress score overall was 26.63 ($SD = 7.69$). Females did experience a slightly higher level of stress than males. The mean perceived stress score for females was 27.63 ($SD = 7.66$) and the mean perceived stress score for males was 25.51 ($SD = 7.62$). Figure 1 shows sex differences on the perceived stress scale. Therefore, although results were not significant, they did show a slight trend in the direction of the initial hypothesis.

Results for the Ten Item Personality Inventory (TIPI) scale found that perceived stress had a significant effect on the personality dimension of emotional stability, but not on extraversion, openness, agreeableness, or conscientiousness. Participants could score between 1 and 7 on each dimension. $N = 85$ participants were used to examine effects of perceived stress on emotional stability. Results showed a significant effect of perceived stress on emotional stability, t (83) = 4.97, $p < .001$. The mean emotional stability score for low stress participants was 5.30 ($SD = 1.06$) and the mean emotional stability score for high stress participants was 3.99 ($SD = 1.35$). Results indicated that students with low perceived stress were significantly more emotionally stable, and showed less negative emotion.

Males scored significantly higher than females on emotional stability, t (128) = -3.36, p < .001. The mean TIPI emotional stability score for males was 5.08 (SD = 1.13) and the mean emotional stability score for females was 4.34 (SD = 1.34). Males may have a greater overall emotional stability than females, but it is also possible that men reported less experience of negative emotions than females did.

Females scored significantly higher than males on agreeableness, t (128) = 1.97, p = .05. The mean TIPI agreeableness score for females was 5.03 (SD = 1.09) and the mean agreeableness score for males was 4.68 (SD = .90). Females may report higher agreeableness due to socialization to be passive. While dominance and aggression are generally acceptable in males, agreeableness is viewed as a more desirable trait in females.

Hypothesis 2: Perceived stress and health habits. The second hypothesis stated that participants who scored low on the Perceived Stress Scale would have better nutrition habits, exercise habits, and time management skills. The reasoning behind this was that taking care of oneself would lead to less perceived life stress. There were six health habits in each category. The score for each health habit subscale (nutrition, exercise, and time management) could range from 6 to 30, resulting in an overall score of between 18 and 90. N = 82 participants were used to test hypothesis 2.

Results provided support for this hypothesis. The effect of perceived stress level (high or low) on overall health behaviors was tested. The result for overall health behaviors was significant, t (80) = 3.89, p < .01. The mean score for health behaviors was 61.38 (SD = 9.10) in students who perceived low stress and 53.35 (SD = 9.62) in students who perceived high stress, indicating that low stress students had better overall

health care habits. Figure 2 displays the results for stress and health habits.

Individual scoring of each health behaviors category further demonstrates that low stress students consistently have better health behaviors across all categories measured. $N = 85$ participants were used to test nutrition habits and perceived stress. The result for nutrition habits was significant, t (83) = 3.29, $p < .01$. The mean nutrition score was 21.24 ($SD = 3.40$) for low stress students and 18.65 ($SD = 3.84$) for high stress students, indicating that low stress students had better nutrition habits.

$N = 84$ participants were used to test exercise habits and perceived stress. The result for exercise was significant, t (82) = 3.01, $p < .01$. The mean exercise score was 19.14 ($SD = 5.16$) for low stress students and 15.48 ($SD = 5.97$) for high stress students, indicating that low stress students had better exercise habits.

$N = 85$ participants were used to test time management and perceived stress. The result for time management was significant, t (83) = 3.14, $p < .01$. The mean time management score was 21.00 ($SD = 3.36$) for low stress students and 18.79 ($SD = 3.13$) for high stress students, indicating that low stress students had better time management habits.

Fifty-nine (44.0%) students reported sleeping 6 or less hours in an average night, and 75 students (56.0%) reported sleeping between 7-9 hours per night. Among participants who reported 6 or less hours of sleep per night, 36.7% perceived low stress while 63.3% perceived high stress. Among participants who reported 7-9 hours of sleep per night, 56.1% perceived low stress while 43.9% perceived high stress. One hundred thirty-four participants were used to measure sleep habits with the result that $\chi^2(1) = 2.98$, $p = .08$. There was not a significant difference on perceived stress habits and sleep.

The effect of gender on health habits was also analyzed. The test for gender and health habits, t (123) = -1.19, p = .24, was not significant. The mean score for females on overall health behaviors was 58.01 (SD = 10.64) and the mean score for males on overall health behaviors was 60.18 (SD = 9.41). The test for gender and nutrition, t (129) = -1.19, p = .24, was not significant. The mean score for females on nutrition was 20.01 (SD = 4.23) and the mean score for males on nutrition was 20.83 (SD = 3.43). Exercise habits and gender fell just short of significance, t (126) = -1.93, p = .06. The mean exercise score for females was 17.34 (SD = 5.52) and the mean exercise score for males was 19.30 (SD = 5.96). The trend of males exercising more than females could be due to males being conditioned to consider exercising as more sex-role appropriate. The test for time management and gender, t (128) = .51, p = .61, was not significant. The mean score for females and time management was 20.25 (SD = 3.69) and the mean score for males on time management was 19.97 (SD = 2.53).

N = 132 students were used to examine exercise habits with the result that χ^2 (3) = 22.91, p < .001. Thirty-six students (27.1%) participated in less than one hour of exercise per week, 54 (40.6%) participated in 1-3 hours per week, 18 (13.5%) participated in 4-5 hours per week, and 24 (18.5%) participated in 6 or more hours per week. Figure 3 shows students' reported hours of exercise per week.

N = 133 participants were used to examine nutrition habits. Results showed significant difference in reported nutrition habits, χ^2 (3) = 63.66, p < .001. Thirty-two (24.1%) students stated that they often considered their eating habits nutritious, while 69 (51.9%) sometimes considered their eating habits nutritious. Additionally, 27 (20.3%) rarely considered their eating habits nutritious and 5 (3.8%) never considered their eating

habits to be nutritious. Figure 4 shows the level of nutritious eating habits reported by students.

N = 132 participants were tested on perceived physical health. Sixty-eight (50.7%) students reported usually considering themselves physically healthy, while 51 (38.1%) sometimes considered themselves physically healthy and 15 (11.2%) rarely considered themselves to be physically healthy. Figure 5 shows students' perceived physical health.

For Wallston, Wallston, and DeVellis' (1978) Multidimensional Health Locus of Control Scale (MHLOC), there was a significant difference on the internal subscale for gender, t (123) = -2.30, p = .02. Males scored more internal than females, 27.2 (SD = 3.69) and 25.5 (SD = 4.65), respectively. There were no gender differences for the chance or powerful subscales.

Overall, the current data for the internal multidimensional health locus of control is similar to what Wallston and colleagues found. Current students' overall mean for internal multidimensional health locus of control was 26.26, and Wallston and colleagues found their sample to have a mean of 25.10.

Hypothesis 3: Perceived stress and minor medical issues. The third hypothesis was that participants with a low perceived stress score would experience fewer minor medical issues. The results, t (85) = -.62, p = .54, did not support this hypothesis. The mean score on minor medical issues per month was 1.65 (SD = 1.23) for low stress students and 1.82 (SD = 1.28) for high stress students.

There was a significant difference between males and females in students' reported minor medical issues. The result for minor medical issues was significant, t

(131) = 2.99, *p* < .01. The mean score for minor medical issues was 2.10 (*SD* = 1.37) in females and 1.47 (*SD* = .98) in males. Figure 6 shows the number of minor medical issues per month reported by students. Thus females report more minor medical issues than males do.

It is possible that females really do experience more minor medical issues than males, but it is also possible that males report fewer issues out of concern for being viewed as weak. Additionally, differences may exist between males and females regarding what constitutes a minor medical issue.

When surveyed about how many times they had experienced a minor medical issue such as a headache, cold, stomachache, or muscle pain unrelated to a chronic condition in the past six months, significant differences were found, χ^2 (4) = 151.70, p < .001. Eighty-three (62.4%) students reported 0-10 times, 18 (13.5%) reported 11-20 times, 14 (10.5%) reported 21-30 times, 10 (7.5%) reported 31-40 times, and 8 (6.0%) reported 41 or more times. Forty-five (33.3%) rated the discomfort caused by these issues as minimal, 56 (41.5%) as minor, 32 (23.7%) as moderate, and 2 (1.5%) as intense. Figure 7 shows the frequency of minor medical issues reported by the students.

Hypothesis 4: Perceived stress and academic performance. The fourth hypothesis was that participants with a low perceived stress score would show higher academic performance. The results for the effect of perceived stress on high school grade point average, *t* (84) = 1.06, *p* = .29, did not provide evidence for a relationship between grade point average and low perceived stress. The mean reported high school GPA was 3.34 (*SD* = .54) for low stress students and 3.22 (*SD* = .54) for high stress students. While lower stress students had a slightly higher high school GPA, the difference was not

significant.

        Hypothesis 5: Perceived stress, hassles, and uplifts. The fifth hypothesis was that people with a low perceived stress score would experience fewer daily hassles and more daily uplifts. The reasoning for this was that people who experienced more uplifts and fewer hassles would be more relaxed and experience less stress as a result. Results from the Perceived Stress Scale (Cohen et al. 1983) and Daily Hassles and Uplifts Scales (Kanner et al., 1981) provided evidence that both hassles and uplifts are significantly affected by the amount of perceived stress a person experiences. Overall, students experienced a mean of 30.26 ($SD = 13.60$) hassles per month compared to a mean of 50.51 ($SD = 19.37$) uplifts per month. Students reported significantly more uplifts per month than hassles, $t(84) = 9.32$, $p = .01$. Figure 8 displays results for the overall number of hassles and uplifts per month reported by students.

        An analysis of perceived stress on daily hassles was significant, $t(63) = -3.00$, $p < .01$. The mean number of hassles experienced in one month was 24.62 ($SD = 11.65$) for low stress students and 33.36 ($SD = 11.69$) for high stress students. These results indicate that low stress students experience fewer hassles than do high stress students. Figure 9 shows the relation between stress and daily hassles.

        The result for the effect of stress on daily uplifts experienced in one month was also significant, $t(65) = 2.93$, $p < .001$. The mean number of daily uplifts experienced in one month was 55.65 ($SD = 22.95$) for low stress students and 41.73 ($SD = 14.93$) for high stress students. Thus low stress students experienced significantly more daily uplifts compared to high stress students. Figure 10 shows the relation between stress and daily uplifts.

No significant sex differences were found for either hassles or uplifts. The mean number of hassles for females was 31.61 (*SD* = 15.52) and for males was 28.72 (*SD* = 10.99). The mean number of uplifts for females was 51.12 (*SD* = 19.62) and the mean was 49.82 (*SD* = 19.29) for males.

Discussion

The analyses run on the data demonstrated that there were significant differences between perceived stress in college students and health habits. There was also a significant effect between perceived stress and daily hassles and uplifts. There was not, however, an effect between perceived stress and gender, minor medical issues, or grade point average.

Hypothesis one, which stated that females would experience more perceived stress than males, was not significant. However, females did show a trend in the direction predicted. One possibility for the results of perceived stress and gender is that men and women do experience approximately equal amounts of stress but deal with different types of stressors. This study only took amount of stress into account and did not measure the different types of stressors in students' lives. Analysis of the types of stressors in men's and women's lives could provide more detailed information on how stress affects both genders.

Results for analysis of the Ten Item Personality Inventory (TIPI) scale demonstrated that perceived stress had a significant effect on the personality dimension of emotional stability, but not on extraversion, openness, agreeableness, or conscientiousness. The TIPI also found that males were significantly more emotionally

stable, but that females were significantly more agreeable. Originally we thought that personality would have an important influence on stress . The finding that low perceived stress was significant only for emotional stability suggests that emotionality might be a key to understanding stress in college students, and perhaps helping students deal with negative emotions might help them also decrease their stress levels. It is interesting that males tended to be more emotionally stable.

Hypothesis two, which stated that low stress students would have better health habits than high stress students, was supported by data. Good exercise, nutrition, and time management habits typically lead to better physical health and better prioritization, both of which could potentially eliminate some stress in students' lives. Educating students about the relationship between good health habits and lower stress levels could lead to improvement in many areas of their lives. Students might be more likely to utilize better time management and take better care of their bodies if they understand the positive consequences of doing so. One possibility is to incorporate this information into a class for incoming freshmen. A class that introduces students to college is already required at many universities, and self-care and stress management are both important variables for success throughout college.

Results from the Multidimensional Health Locus of Control scale indicate that males are slightly more internal, and might suggest that different strategies should be used to encourage good health habits in males and females. For example, perhaps self-improvement might work better for males, whereas social reinforcement might be better used with females.

Hypothesis three stated that students who experienced less stress would report

fewer minor medical issues than students who experienced high stress. This hypothesis was not supported by data. One possibility is that the group of college students surveyed consisted primarily of traditional students in their late teens or early 20s. Because of their age, the students may not have had a large number of health complaints and thus would not be affected by those issues. Dua (1994) found that individuals who experienced a great deal of work-related stress experienced higher levels of physical health problems. The stress measured in Dua's study, however, was restricted to stress experienced in the workplace. The stress measured in the present study was related to both school issues and non-school issues, making it a more comprehensive measure of stress and possibly explaining the differing results.

There was a significant gender difference in reports of minor medical issues, with women reporting more issues than men. This could be because females really did experience more minor health issues, or perhaps men were less comfortable with reporting stress because of the societal pressure on males to be strong. Roddenberry and Renk's (2010) study reported a significant relationship between stress and illness in a group of primarily female students. This female majority was addressed as a limitation of their study but actually provides insight into a possibility not addressed by the present study. Future research could explore further the relationship between minor medical issues and stress among women.

Hypothesis four stated that people with a lower perceived stress score would perform better academically than people with a higher perceived stress score. Although this hypothesis was not significant, it did show a trend in the direction of the initial hypothesis. It is possible that students who experience low amounts of stress perform

better academically because they are more mentally able to focus on studying and homework. Higher stressed students may have responsibilities that distract them such as a high number of work hours or dependent children at home. As with hypothesis one, a more concise measurement of types and intensity of stress might be helpful in future research.

It is important to note that high school GPA, not college GPA, was used to determine academic performance since the majority of participants were incoming freshmen who did not yet have a college GPA. The trend could possibly have been greater if GPA had been assessed after students had been in college for several quarters. Additionally, the GPA for all students was rather high, suggesting that it might have been inflated or not accurately remembered by the students. It is unlikely, but some students might prefer higher levels of stress to motivate themselves. It is possible that high sensation seekers need a higher level of arousal in order to complete tasks.

Another possibility is that GPA actually was represented accurately because high school students with high grades are more likely to get into college than those with lower grades. One method of controlling for this possibility would be to test participants after their first term of college so that college GPA can be used.

Hypothesis five stated that a low perceived stress score would result in a low number of daily hassles and a high number of daily uplifts. In other words, students who are less stressed experienced greater numbers of small pleasures throughout the day. This hypothesis was supported by the results.

A variable that was not explored in the present study is what makes an individual perceive a daily event as a hassle or an uplift. Perhaps individuals who experience low

stress are more optimistic, thereby perceiving fewer hassles or perhaps viewing hassles as opportunities. Future studies could reduce the possibility of additional factors being responsible for the relationship between uplifts, hassles, and stress, as well as increasing awareness of uplifts and hassles and the effect that they can have on one's life.

Also, it is very likely that the hassles and uplifts listed in the surveys given to participants were not the only ones they experienced. A space to write down other hassles and uplifts not listed in the surveys could reduce this possibility in future studies.

A better understanding of stress could be beneficial to college students in several ways. First, knowledge of which gender group experiences the most stress could be helpful in providing aid to those who need it. Programs targeted specifically at helping women manage stress may meet their needs better than a general approach. Also, understanding how stress is related to illness and proper self-care health habits has the potential to help students become healthier and better able to handle stress. Evidence of the importance of good self-care habits may encourage students to refrain from engaging in unhealthy habits. Overall, an awareness of what causes stress may empower students to take preventative measures in order to keep it from occurring.

Concluding Remarks

Conducting this study has helped me to better understand the results of making good health choices and using stress management in my own life. This is a practical application that I will continue to use in graduate school. It has also made me more aware of gender differences in experiencing stress, and knowing that there is a difference will be beneficial later in my career when I am working with clients experiencing different types of stress.

Working on a senior honors thesis project has been a highlight in my undergraduate experience because it taught me that research is often both fun and frustrating at different stages. The results of continued persistence on this project have been very rewarding. The thesis has helped me develop my writing skills and critical thinking skills because I had so much more time to review and revise it than I would have with a typical college paper written over the course of a few weeks. I feel better equipped to handle graduate-level writing and data analysis as a result of doing this thesis, and I look forward to conducting more research in the future.

References

Aanes, M. M., Mittelmark, M. B., & Hetland, J. (2010). Interpersonal stress and poor health. *European Psychologist, 15*, 3-11.

Benham, G. (2006). The highly sensitive person: stress and physical symptom reports. *Personality and Individual Differences, 40*, 1433-1440.

Brown, J. (1991). Staying fit and staying well: physical fitness as a moderator of life stress. *Journal of Personality and Social Psychology, 60*, 555-561.

Ciarrochi, J., Deane, F. P., & Anderson, S. (2002). Emotional intelligence moderates the relationship between stress and mental health. *Personality and Individual Differences, 2*, 197-209.

Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior, 24*, 385-396.

DeLongis, A., Coyne, J. C., Dakof, G., Folkman, S., & Lazarus, R. S. (1982). Relationship of daily hassles, uplifts, and major life events to health status. *Health Psychology, 1*, 119-136.

DeLongis, A., Folkman, S., & Lazarus, R. (1988). The impact of daily stress on health and mood: psychological and social resources as mediators. *Journal of Personality and Social Psychology, 54*, 486-495.

Dua, J. K. (1994). Job stressors and their effects on physical health, emotional health, and job satisfaction in a university. *Journal of Educational Administration, 32*, 59-78.

Folkman, S., Lazarus, R. S., Gruen, R. J., & DeLongis, A. (1986). Appraisal, coping, health status, and psychological symptoms. *Journal of Personality and Social Psychology, 50*, 571-579.

Garrard, J., & Brumby, M. (1985). Living and learning in a hectic world: students' perceptions of stress. *Research in Science Education, 15*, 58-67.

Gillham, J. E., Shatte, A. J., Reivich, K. J., & Seligman, M. E. P. (2001). Optimism, pessimism, and explanatory style. Chapter 3. In E.C. Chang (Ed). Washington DC: APA, p 53-73.

Gosling, S. D., Rentfrow, P. J., & Swann, W. B. Jr. (2003). A very brief measure of the Big-Five personality domains. *Journal of Research in Personality, 37*, 504-528.

Holahan, C. J., & Moos, R. H. (1985). Life stress and health: personality, coping, and family support in stress resistance. *Journal of Personality and Social Psychology, 49*, 739-747.

Ilgen, M. A., & Hutchison, K. E. (2005). A history of major depressive disorder and the response to stress. *Journal of Affective Disorders, 86*, 143-150.

Kanner, A. D., Coyne, J. C., Schaefer, C., & Lazarus, R. S. (1981). Comparison of two modes of stress measurement: daily hassles and uplifts versus major life events. *Journal of Behavioral Medicine, 4*, 1-39.

Lund, H. G.; Reider, B. D., Whiting, A.B., & Prichard, J. R. (2010). Sleep patterns and predictors of disturbed sleep in a large population of college students. *Journal of Adolescent Health, 46*, 124-132.

Manning, M. R., & Fusilier, M. R. (1999). The relationship between stress and health care use: an investigation of the buffering roles of personality, social support, and exercise. *Journal of Psychosomatic Research, 47*, 159-173.

Oliver, G., & Wardle, J. (1999). Perceived effects of stress on food choice. *Physiology and Behavior, 66*, 511-515.

Ragsdale, J. M., Beehr, T. A., Grebner, S., & Han, K. (2011). An integrated model of weekday stress and weekend recovery of students. *International Journal of Stress Management, 18*, 153-180.

Roddenberry, A., & Renk, K. (2010). Locus of control and self-efficacy: potential mediators of stress, illness, and utilization of health services in college students. *Child Psychiatry and Human Development, 41*, 353-370.

Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological Monographs, 80*, (1, Whole No. 609).

Ruthig, J.C., Marrone, S., Hladkyj, S., & Robinson-Epp, N. (2011). Changes in college student health: implications for academic performance. *Journal of College Student Development, 52*, 307-320.

Scheier, M. F., & Carver, C. S. (1985). Optimism, coping, and health: assessment and implications of generalized outcome expectancies. *Health Psychology, 4*, 219-247.

Siddique, C. M., & D'Arcy, Carl. (1984). Adolescence, stress, and psychological well-being. *Journal of Youth and Adolescence, 13*, 459 – 473.

Von Ah, D., Ebert, S., Ngamvitroj, A., Park, N., & Kang, D. (2004). Predictors of health behaviours in college students. *Journal of Advanced Nursing, 48*, 463-474.

Wallston, K. A., Wallston, B. S., & DeVellis, R. (1978). Development of the multidimensional health locus of control scales. *Health Education Monographs, 6*, 160-170.

Wallston, K. A. (2005). The validity of the multidimensional health locus of control scales. *Journal of Health Psychology, 10*, 623-631.
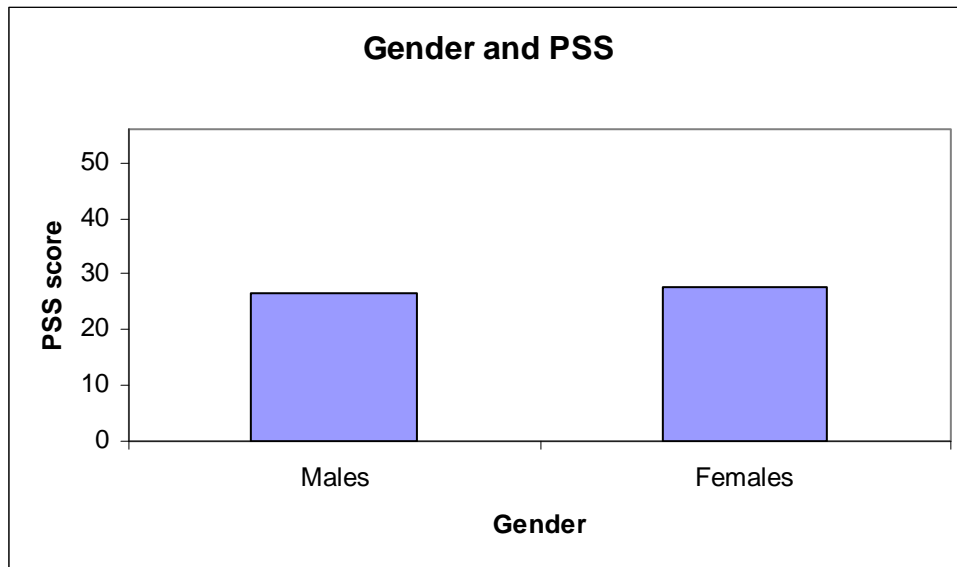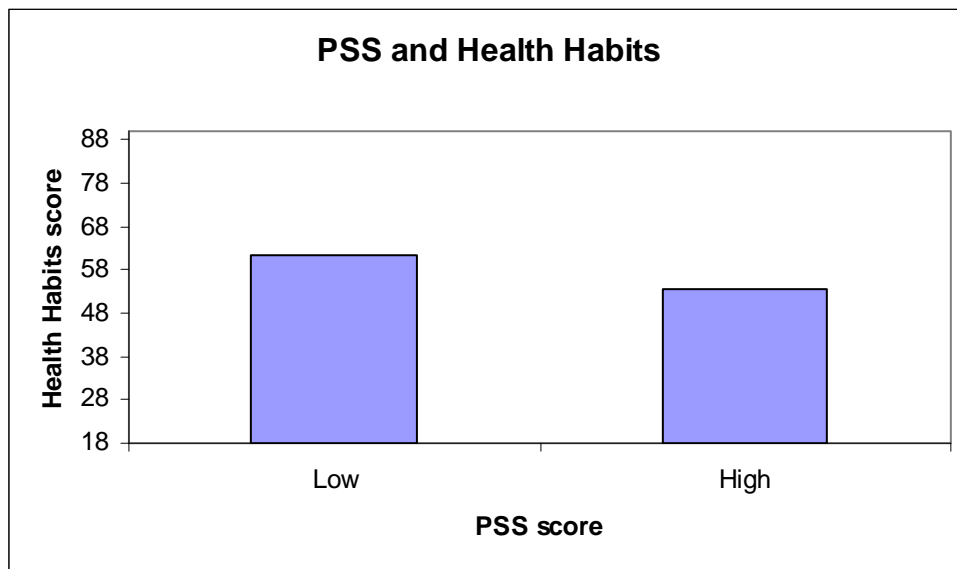
Figure 1. Gender and perceived stress.

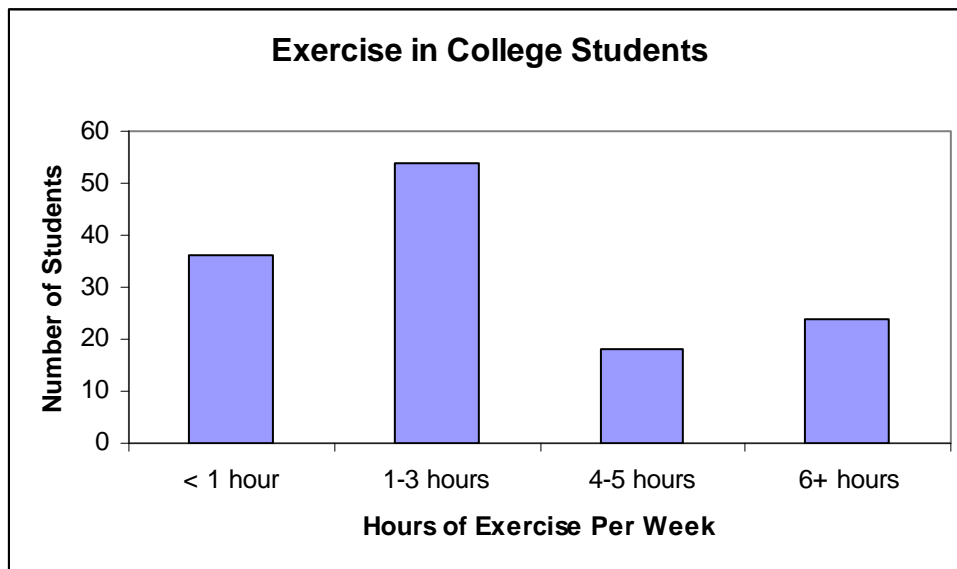*Figure 2.* Perceived stress level and total health behavior score.

Exercise in College Students

Figure 3. Amount of exercise reported by students.
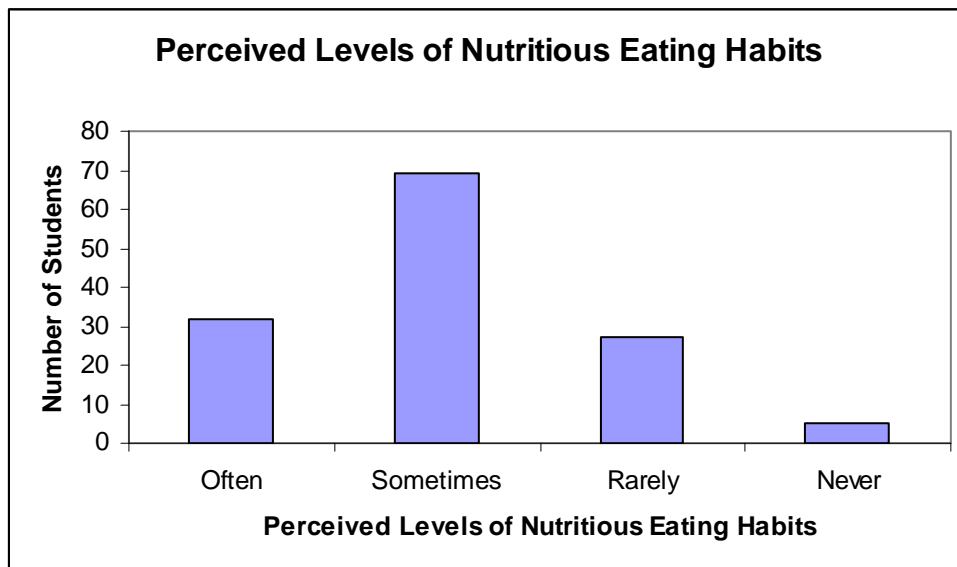
Perceived Levels of Nutritious Eating Habits

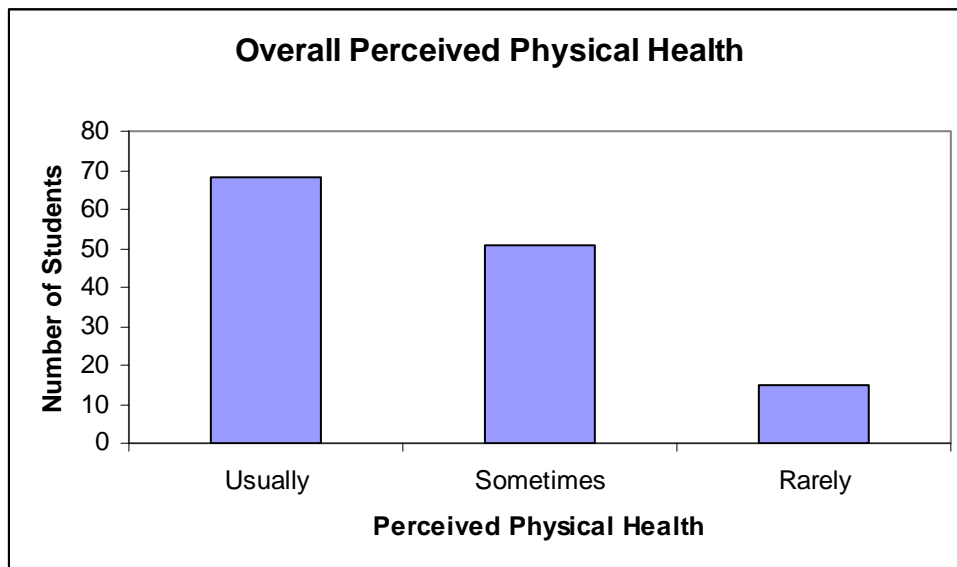*Figure 4*. Level of nutritious eating habits reported by students.

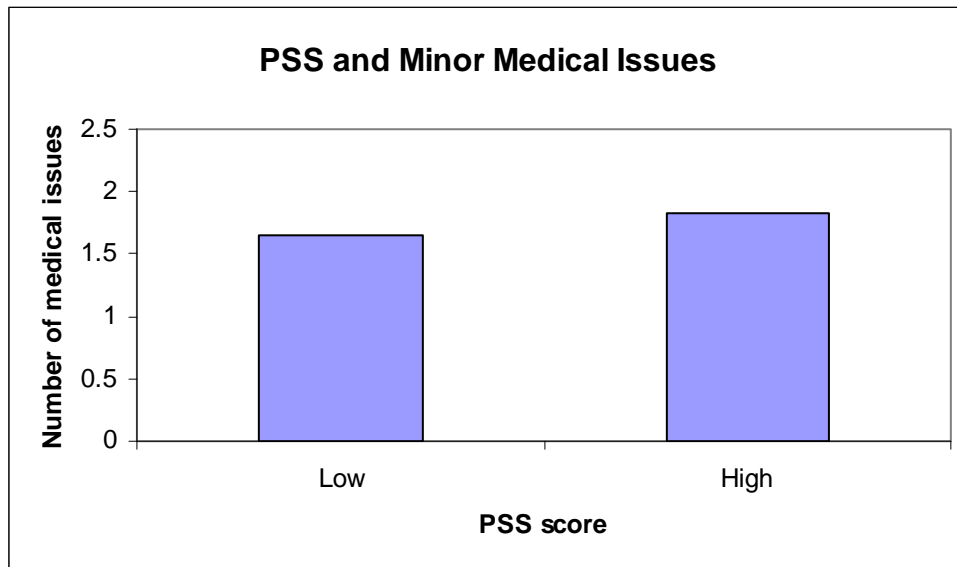*Figure 5*. Reported perception of being physically healthy by students.

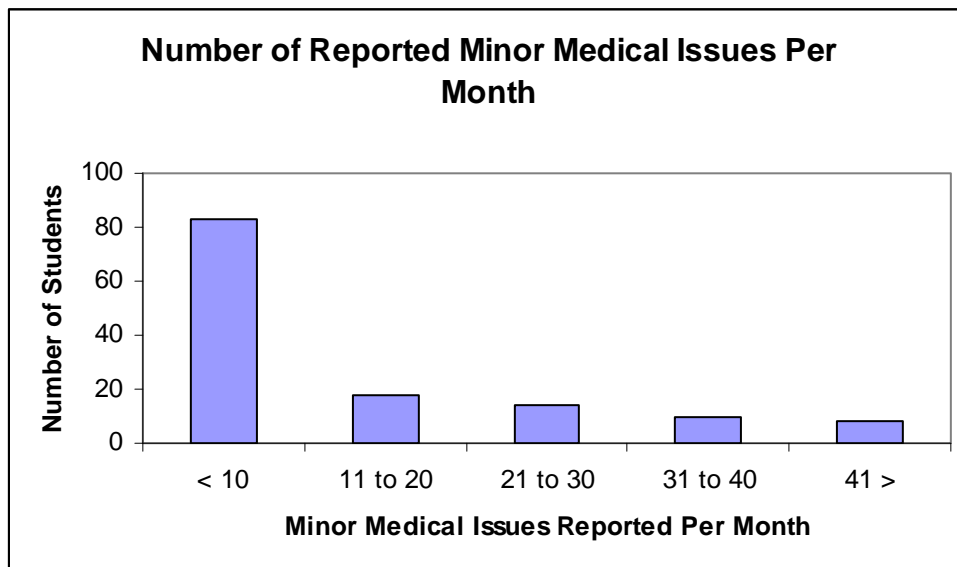*Figure 6*. Number of minor medical issues per month reported by students.

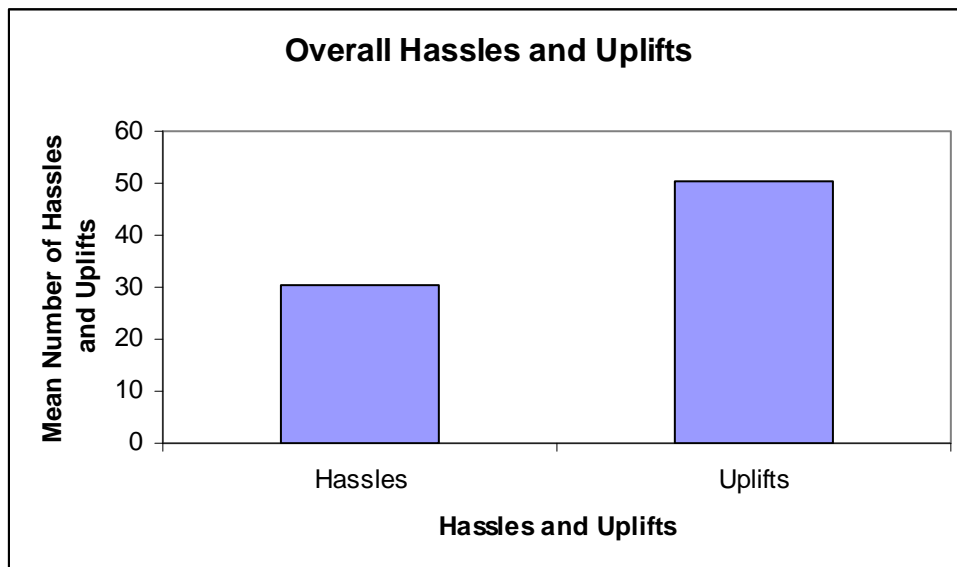*Figure 7.* Percentage of students reporting minor medical issues per month.

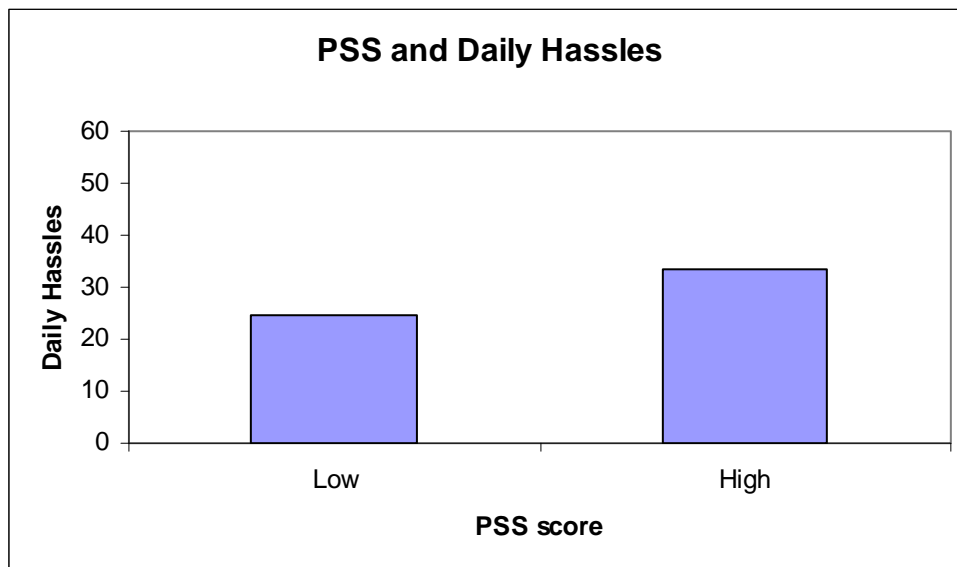*Figure 8*. Mean number of hassles and uplifts reported by students per month.

Figure 9. Perceived level of stress and number of hassles experienced per month.
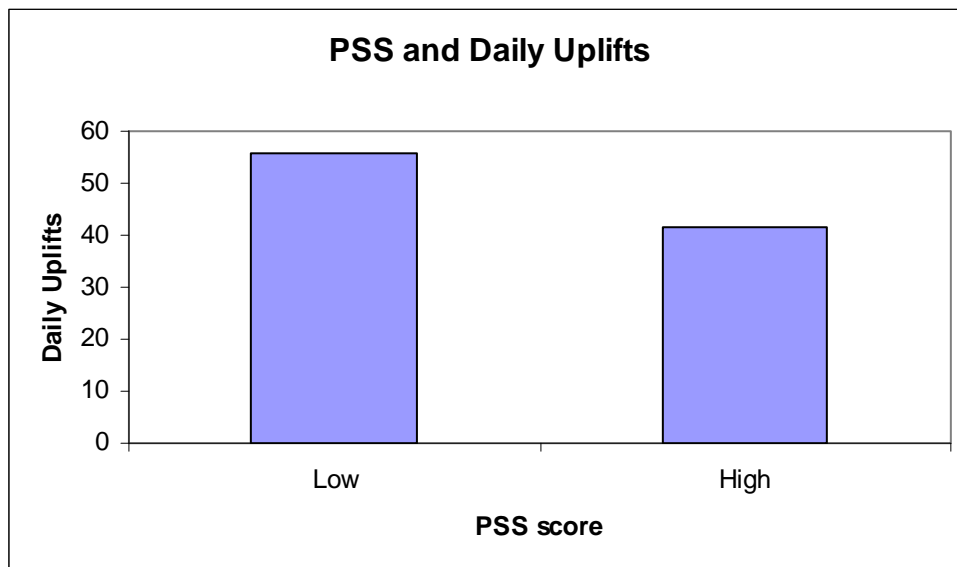
PSS and Daily Uplifts

Figure 10. Perceived level of stress and number of uplifts experienced per month.