

Fall 12-7-2016

# Student Lifestyle Choices and Perceptions of Stress Based on Majors

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## Recommended Citation

Robinson, Nathan; Andrews, Seth; and Yoder, Benjamin E., "Student Lifestyle Choices and Perceptions of Stress Based on Majors" (2016). *Kinesiology and Allied Health Senior Research Projects*. 5.  
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Student Lifestyle Choices and Perceptions of Stress Based on Majors

Senior Research Study

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## Effects of Perceived Stress on Health Habits of Cedarville Undergraduate Students

### **Introduction**

Stress and perceived stress of various academic majors has a profound effect on the eating and exercise habits of students in undergraduate institutions. Through research the best definition for stress was found to be “a particular relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her well-being” (Lazarus & Folkman, 1984). The purpose of this study was to find and understand the correlation between stress levels and how they relate to nutrition and exercise habits in Cedarville University undergraduate students. This study is both relevant and valid because integration of healthy exercise and eating habits into existing stress management techniques has been proven effective in combatting stress in students (SOURCE). The hypothesis of this study was that perceived stress based on academic major would positively correlate with poor health choices. There will be higher incidences of stress among females in science-focused majors (e.g. engineering, pharmacy, nursing, biology, etc.)

### **Review of Literature**

This study was significant because it provided a good overview of perceived stress and the eating and exercise habits of undergraduate students at Cedarville University. The supporting literature did not specifically examine or quantify the incidence of stress based on specific ranges of academic majors or the unique environment that is provided at Cedarville University. Several studies assessed stress, nutritional habits and exercise of undergraduate students of various universities, but the researcher's goal was to see how those factors correlated specifically with

students at Cedarville University. This was of particular import because the institution in question emphasizes “good stewardship” of students’ bodies (which includes healthy food choices and proper stress management) through the Physical Activity and the Christian Life (PACL) course, which every undergraduate student is required to take. This can also be seen in the good quality of nutrition options in the cafeteria, active extra curricular activities, intramural sports, and an excellent gymnasium that is available to the student body.

Bible verses that support the university’s view of health “stewardship” and that are integral to the PACL course are 1 Corinthians 6:19-20, and 1 Timothy 4:8. The former states, “Or do you not know that your body's a temple of the Holy Spirit within you, whom you have from God? You are not your own, for you were bought with a price. So glorify God in your body.” (ESV). 1 Timothy 4:8 reads, “**For** while bodily training is of some value, godliness is of value in every way, as it holds promise for the present life and also for the life to come.” (ESV) This study sought to discover how students holding these views and influenced by this environment managed their perceived stress.

Several studies dealt with stress management interventions such as the article entitled *OT Student’s Experiences of Stress and Coping* by Govender, Mkhabela, Hlongwane, Jalim, and Jetha which identified several sources of stress and ways to manage stress that were used by undergraduate occupational therapy students. The purpose of the study was to find out the varieties and occurrence of stressors and ways to manage that students utilized. Govender, et. al. collected data through a descriptive survey design which included a student demographic questionnaire, a descriptive stress survey and a coping checklist- all of which were similar to

aspects of our survey design. The participants consisted of 101 occupational therapy students ranging from ages 17-28 years old, (91%) of which were female and (8.1%) were male.

Govender, et al. found that academic, personal and university-related stressors were the most prevalent stressors that occupational therapy students faced. Of the three stressors, personal stressors were the most prominent at (82.4%) among fourth year students. For third year students, academic stressors were the most prominent at (95.8%). For second year students the most predominant stressor was university related at (58.6%). Academic stressors were the most prominent for first year students at (65.5%). Students in the study identified the prevailing coping mechanisms as “emotion focused, focusing on the positive, seeking social support, self-blame, wishful thinking and others” (Govender, et al., 2015).

In the study *Habits and attitudes of first-year female students at Warmia and Mazury University: A Call for Implementing Health Education Programme at Universities* by Podstawski, Choszcz, Klimczak, Kolankowska, and Zurek, the reason behind the research was to assess the habits and attitudes of a healthy lifestyle for first-year female students enrolled in the University of Warmia and Mazury. Podstawski, et al. were looking for health risks and the need to present remedial measures.

Participants were randomly selected to take a survey and they consisted of 762 first-year female students at UWM in the summer semester of the academic year 2009/2010. The survey consisted of 27 questions with 20 being closed end questions and 7 being open ended questions. The open ended questions were to give the participant a more detailed and in-depth response. The questions focused on the amount of physical activity, nutrition, alcohol and tobacco use, and

stress. Podstawski, et al. used a Statistica PL v. 10 software package to analyze the data that the received.

The results showed that (54.88%) of female students did only one type of Physical activity in high school and (38.26%) two types, (5.67%) three types, and (1.19%) did four types of Physical Activity. Their diet had a positive effect on their health (60.52%) and it likely to affect their future health. About (72%) of the participants were willing to adjust their diet and the rest had no intention of changing. For alcohol use about (61.11%) consumed alcohol on a regular basis and only (9%) did not drink at all. Tobacco use was also asked about in the survey and the results showed that (65%) of females did not smoke, and (16.58%) smoked occasionally. Lastly, the survey asked stress related questions. The majority of the females stated that stressful situations cannot be avoided. Techniques that were used to overcome that stress consisted of sports, meeting with friends, listening to music, indulging in relaxation techniques, and going for a walk (Podstawski, et al., 2016).

The study *Perceived Stress and Sources of Stress Among first-year Medical Undergraduate Students in a private medical college* by Swaminathan, Viswanathan, Gnanadurai, Ayyavoo, and Manickam, assessed the prevalence of stress among first-year medical undergraduate students and to separate the potential stressors and categorize them under academic, psychosocial, and health related (Swaminathan et al., 2016).

Participants were students from the SRM Medical College Hospital and research Centre. It was a cross sectional study questionnaire that used had three parts: demographic information which were intended to understand the background of each participant, Cohen's Perceived Stress Scale questionnaire, and a 33-item list of potential stressors. The Perceived stress questions were

answered using a likert scale ranging from 0= never and 4= very often. Potential stressors were categorized under academic, psychosocial, and health-related stressor. The frequency of occurrence was represented by a scale of 1 to 5 with 1= never and 5= always (Swaminathan et al., 2016).

The results of the 147 participants showed that (17.7%) were under mild stress and (71.4%) were under moderate stress and (10.9%) were under severe stress. The most significant stressors for academics were the frequency of exams, the academic curriculum, lack of time for recreation, competition with peers, becoming a health professional/engineer, and performance in practicals. For the psychosocial stressors they consisted of loneliness, living conditions in the hostel, adjustment with roommates, type and method of food preparation. Lastly, the health-related stressors were sleeping, class attendance, and nutrition.

The study *Physical activity, nutrition, and self-perception changes related to a university "lifetime fitness for health" curriculum* by Woekel, Ebbeck, Concepcion, Readdy, Li, Lee, and Cardinal, aimed to assess whether a "lifetime fitness for health" course would have both short and long-term benefits. This included aspects like physical activity, nutritional choices, and self-perception behaviors. This course was very similar to the Physical Activity and the Christian Life (PACL) course that is required at Cedarville. The study assessed methods of stress management that were integral to formulating several of our survey questions.

Participants of the study by Woekel, et al., (2013) were 20 undergraduate students, 15 female and 5 male, at a state university in the Pacific Northwest. Students in the study took a 10 - week class which comprised of 100 minutes of lab and lecture per week. The class sought to teach aspects of physical activity and nutrition in order to help students improve their self-

perception. These included activities such as strength training, athletic games and sports, and cardiorespiratory conditioning. The lab portion of the class instructed students to set goals, complete a dietary analysis, nutritional journaling and several others. Results showed that students became more cognizant of the fact that they needed to shift their focus in the direction of healthy eating and regular physical activity. 80% of participants identified an area in the lifetime fitness for health course that they learned or needed to improve. Participants, as a result, were more likely to share their newly-acquired knowledge with friends. The course supplied the students with knowledge to manage health through physical activity and proper nutritional choices therefore promoting both short-term and long-term behavior changes.

In the article, *Food and Mental Health: Relationship Between Food and Perceived Stress and Depression Symptoms Among University Students in the United Kingdom* by Ansari, Adetunji, and Oskrochi, a correlation was found between mental health and nutrition, while also looking at self-reported perceived stress and depressive symptoms and food habits. “The three were to: describe the food consumption behavior and two mental health indicators of students by university and gender. To assess the associations between food consumption behavior and two mental health indicators by gender (univariable analysis). Lastly, to assess the associations between food consumption behavior and two mental health indicators by gender (multivariable analysis) (El Ansari, W., Adetunji, H., & Oskrochi, R. 2014).

Data was collected from 7 Universities in Northern Ireland, Wales and England. Each questionnaire outlined the objective of the survey and the purpose of the research. Each participant self-reported their nutritional habits, the questions measured their consumption of sweets, cakes/cookies, snacks and fast/canned food, fresh fruits, raw and cooked vegetables and



salads, meats and fish, milk products, and cereals. The question started with “How often do you eat the following foods?” 12 items were measured on a five point scale. Cohen’s perceived stress scale was used to determine the perceived stress that the participants felt in certain situations.

The results of the study compared 3,706 students from the 7 Universities. In all of the universities consuming sweets was more common in females than in males. As for fast/ canned foods they were consumed by males than females. Females typically had higher stress and had higher depression symptoms based off the results for the mental health indicators. “The findings suggested that the consumption of the different food groups was related to both stress and depression symptoms”

Further research revealed that there was a significant difference between males and females in regard to perceived stress. Females reported higher levels of stress than males and had less effective stress management techniques such as lower physical activity (Deasy, Coughlan, Pironom, Jourdan, and McNamara, 2014). The study noted that females generally respond more to stressors than males. This was significant because it showed that with the same course load, males had more effective stress management techniques than females.

This was investigated further with the study by Ying, L., & Lindsey, B. J. (2013) which showed that males were more likely to engage in light-to-moderate physical activity 5 or more times a week than females (43.5% of females vs. 51.7% of males), and engage in vigorous physical activity for 20 minutes or more 3 times a week (42.6% of females and 51.3% of males).

### **Materials and Methods**

For this study, a health habits survey was sent out which evaluated individuals perceived stress and how it affected their diet and exercise habits. The survey was 27 questions and

assessed individual perceived stress, nutritional habits and how PACL helped manage that stress. The researchers sought to assess how age, gender, major, and academic year correlated with perceived stress levels and nutritional habits.

Approval for this research was received from the Cedarville University Institution Review Board. Cedarville University is located in Cedarville, Ohio. The population of the University was around 3700 students. Two separate invitation emails were sent to the undergraduate population, which totaled about 3000 students ranging from 1st year freshmen to 5th year seniors. Participation was voluntary and anonymous, and the survey data was kept confidential. The recruitment process involved sending out invitation emails on the dates of 13 September and 24 October 2016 (in which the survey was attached, along with an agreement of informed consent) to undergraduate students aged eighteen years or older at Cedarville University. The survey was distributed twice in order to increase the response rate and to formulate a more accurate representation of the University's population. There were 535 (about  $\frac{1}{5}$  of Cedarville's undergraduate student population) responses to the survey. Students were given the researchers' contact information in the event that they might have questions about the survey.

Responses to the survey were recorded automatically in the Qualtrics survey system. Qualtrics is an online resource from a private research software company that allows users to formulate questionnaires. Access to Qualtrics was granted to us through the Cedarville licensure. Data was not taken from participants that had filled out less than half of the survey. 604 students participated in the study, but only 535 filled it out completely; 206 male participants (38.5%) and 329 female participants (61.5%). By academic year, 132 freshmen (24.77%), 128 sophomores

(24.02%), 141 juniors (26.45%), and 132 seniors (24.77%) completed the survey. Participants were classified based on department; Art, design and theatre 17(3.2%), Biblical and Theological studies 23(4.33%), Business Administration 48(9.04%), Communication 29(5.46%), Education 35(6.59%), Engineering and Computer Science 82(15.44%), English, Literature, and Modern Languages 25(4.71%), History and Government 22(4.14%), Liberal Arts 2(0.38%), Kinesiology and allied Health 39(7.34%), Music and Worship 17(3.20%), Nursing 75(14.12%), Pharmacy 22(4.14%), Psychology 24(4.52%), Science and Mathematics 63(11.68%), Social Work 8(1.51%).

The 6 perceived stress questions were formulated using a likert scale. The questions mostly consisted of “how would you rate...?” (5-point scale: 1=not stressful, 5= highly stressed). The researchers used a modified Cohen Perceived Stress Scale which was a 1 to 5 scale (Cohen, S., & Janicki-Deverts, D., 2012). Dietary habit questions were formulated using a likert scale, which consisted of asking “on average how much do you consume...?” The scale ranged from 1 to 5 (1=rarely, 5= 4 or more times). These questions were more specifically divided based on what types of food participants consumed (e.g. lean meat, fruits, vegetables, etc.)

The exercise-based survey questions were included in order to figure out the amount of physical activity of each person. Also, participants were asked what type of exercise they did and why participated in that particular mode of exercise. Participants were given options from which to choose which included: cross training, aerobic exercise (walking, running, bicycling, Zumba), strength training, recreational/competitive sports, and the choice of “Other” for which they were given a space to identify the “other” type of physical activity.

Questions regarding PACL were asked relating to the class and how well stress management techniques were integrated into the curriculum; these questions were limited to the students that had taken it in the past. The questions were included in order to evaluate the effects that the PACL course had upon students and their stress management capabilities.

### **Results**

The results of perceived stress of academic major confirmed the hypothesis of the study. The percentages of students that responded to the survey was apparently representative of the distribution of majors at Cedarville University. The majors with the most students were the Engineering and Computer Sciences Department, and the Nursing Department. Table 1 below shows that the Engineering and Computer Science department had the highest perceived stress at (15.4%) among students with Nursing coming in second at (14.1%) and Science and mathematics coming in third at (11.8%). An outlier that was found in the study was that some participants in the Music and Worship department said that they're major was highly stressful. This was not a result that was expected to come from the survey.

Table 1

		How stressful is your major?					Total
		1 - not stressful at all	2	3	4	5 - highly stressful	
In what department does your major fall?	Art, Design and Theatre	0	3	8	5	1	17
	Biblical and Theological Studies	1	3	12	6	1	23
	Business Administration	2	6	25	15	0	48
	Communication	6	5	9	8	1	29
	Education	0	8	15	11	1	35
	Engineering and Computer Science	1	3	12	40	26	82
	English, Literature and Modern Languages	1	7	9	8	0	25
	History and Government	1	4	10	7	0	22
	Liberal Arts	0	0	2	0	0	2
	Kinesiology and Allied Health	1	2	12	17	7	39
	Music and Worship	0	1	6	6	4	17
	Nursing	0	1	22	28	24	75
	Pharmacy	0	1	2	10	9	22
	Psychology	1	3	11	9	0	24
	Science and Mathematics	0	3	15	28	17	63
	Social Work	0	0	7	1	0	8
Total		14	50	177	199	91	531

Another comparison made was academic year with the perceived stress of students' major. Table 2 shows that 37% of the participants chose a 4 on the perceived stress scale and 33% chose a 3. According to the study, junior year is perceived to be the most stressful academic year among undergraduate students. The table shows that juniors had the highest collective stress among most majors in the 4th and 5th categories. Seniors had the highest incidence of consistent stress in the 4th category.

Table 2.

		What is your academic year?				Total
		Freshman	Sophomore	Junior	Senior	
How stressful is your major?	1 - not stressful at all	1	3	4	6	14
	2	14	14	10	11	49
	3	57	42	44	34	177
	4	45	49	47	60	201
	5 - highly stressful	15	20	36	21	92
Total		132	128	141	132	533

A comparison was done between academic year and various stressors which ranged from academics and school work to spiritual issues. Table 3 indicates that all academic majors ranked academic/school work as the main stressors that they dealt with on a daily basis, making up 71% of responses. Relationships were ranked second at 10.9%. Ranked third at 7.5% was “other stressors,” for which participants identified their chief stressor independently. Some of these responses included time management, health related stress, and ROTC.

Table 3

		What is the main source of your stress?						Total
		Academic/School work	Relationships	Finances	Family issues	Spiritual issues	Other (identify)	
What is your academic year?	Freshman	102	9	7	1	5	7	131
	Sophomore	96	14	4	6	1	6	127
	Junior	98	18	6	3	6	10	141
	Senior	81	17	4	5	7	17	131
	Total	377	58	21	15	19	40	530

Results of the questions related to stress for each academic major and how they related to food choices were compared in Table 4. The data presented in this table does not support the nutrition-related portion of the hypothesis which stated that perceived stress based on academic

major would positively correlate with poor health choices. The highest percentage for the Cohen’s perceived stress scale was a 2 at (31.6%) and the next highest was a 3 on the scale at (30.5%).

Table 4.

		How stressful is your major?					Total
		1 - not stressful at all	2	3	4	5 - highly stressful	
How much does your level of stress impact your food choices?	1 - none	9	9	27	27	11	83
	2	2	22	69	53	23	169
	3	1	13	47	72	30	163
	4	0	4	29	41	23	97
	5 - completely	2	2	6	8	5	23
	Total		14	50	178	201	92

Examining comparisons between gender and management of daily stress, table 5 revealed that males had a higher capability in dealing with their stress than females. 29% of males selected a 1 (very capable) on the stress management capability scale as opposed to 14% of females in the study. More females selected a 2 on the stress management capability scale than males (44% females vs. 38% males) and more females selected a 3 on the stress management capability scale than males (34% females vs. 24% males). A similar question was asked regarding the effectiveness of the PACL course in helping to manage daily stress. Results showed that the majority of students did not feel that the PACL course helped them manage daily stress.

Table 5.

		How capable are you of managing daily stress?					Total
		1 - very capable	2	3	4	5 - not capable at all	
What is your gender?	Male	60	78	50	16	2	206
	Female	46	145	112	24	2	329
	Total	106	223	162	40	4	535

Table 6 below shows data relating the amount of exercise to academic department shows that the most stressful majors have the highest incidence of exercise and that students in these majors exercise more often during the week. Nursing had the most participants who exercised 3 to 4 times a week, with Engineering and Computer Science coming in second and the Science and Mathematics department in third.



Table 6.

		How often do you exercise in a typical week?				Total
		Seldom	1-2 times/week	3-4 times/week	5-7 times/week	
In what department does your major fall?	Art, Design and Theatre	8	3	4	2	17
	Biblical and Theological Studies	9	3	6	5	23
	Business Administration	8	7	20	13	48
	Communication	3	10	12	4	29
	Education	9	7	11	8	35
	Engineering and Computer Science	15	25	26	16	82
	English, Literature and Modern Languages	6	5	10	4	25
	History and Government	5	2	8	7	22
	Liberal Arts	1	0	0	1	2
	Kinesiology and Allied Health	3	5	15	16	39
	Music and Worship	11	3	3	0	17
	Nursing	10	19	29	17	75
	Pharmacy	8	3	6	5	22
	Psychology	5	7	9	3	24
	Science and Mathematics	12	15	25	11	63
	Social Work	0	1	5	2	8
		Total	113	115	189	114

The nutrition questions of the survey asked “On average, how much do you consume...?”

The food types were protein based foods, sugary beverages, amount of water, fruit and vegetables. From the results showed that most of the campus consume a normal amount of healthy foods such as fruits and vegetables on a daily basis. Also, they consume a normal daily value of protein-based foods. One surprising result the nutrition section of the survey was that most of the participants said that they “Rarely or Never” consumed soft drinks, sweet tea, or other sugary beverages.

### **Discussion**

The rationale for asking most of the survey questions was to assess perceived stress and nutritional habits of undergraduate students at Cedarville University. The ideas for these questions came from several sources which include the Cohen's Perceived Stress Scale (a 5-point scale that ranges from 0 to 4 (0= never, and 4=always). The questions for the Perceived Stress survey were similar to the Cohen's Perceived Stress Scale in that it was a 5-point scale that ranged from 1 to 5. The researchers borrowed and modified several survey questions from a previously distributed PACL Effectiveness Survey, conducted by Dr. April Crommett at Cedarville University as well as ideas from several other research studies. Several of the modified questions attempted to find and narrow the results to best answer whether stress, nutrition and exercise habits were correlated. In asking "what is the main source of your stress" the researchers sought to find which stressors were ranked the most prevalent to the least.

### **Limitations**

Limitations of the study included the fact that the campus of Cedarville University is not a very ethnically-diverse, and that the survey did not contain any questions regarding ethnicity (the undergraduate population is primarily Caucasian, middle class students with very similar views due to their common Christian faith). Another limitation was that the campus of Cedarville does not allow any alcohol or drugs on campus, making it different from the typical university campus. Cedarville university has student organizations (abbreviated, "orgs") that could be equated to fraternities and sororities, but are different in that they do not have reputations of alcohol or drug use. Orgs are established with the purpose to serve the community.

Cedarville University is also atypical in that much of the student body is consistently active and healthy. Many students play sports and are involved in intramurals or are regularly active. Because of this, the stress management capabilities of the typical Cedarville student would most likely be more efficient than a student from another school, which could have skewed the results related to major and perceived stress management.

The researchers realized another limitation of the study could potentially be that the personality of students very likely played a significant role in participant selections for each of the survey questions relating to perceived stress. It often seems that individuals within artistically-inclined majors show a propensity toward higher levels of perceived stress. Also, there were no questions in the survey that specifically addressed whether or not students participated in varsity sports. Such questions could help determine other areas of student stress. Varsity sports could be effective for stress management, or could add excess stress to the other areas of the student's life on campus.

### **Conclusion**

In conclusion, the purpose of this study was to find and understand the correlation between stress levels and how they relate to nutrition and exercise habits in Cedarville University undergraduate students. Results showed that the eating habits of undergraduate students on campus were not significantly affected by perceived stress. Recommendations for further research would be to add an additional personality questionnaire; questions related to drug and alcohol consumption could be added to the original survey. It is recommended that research also be conducted on a more ethnically-diverse and more faith-neutral university campus.

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