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Marissa K. Pham April 15, 2019

Exploring Health Behaviors of Health and Non-Health Majors at Emory University

by

Marissa K. Pham

Tracy L. Scott
Adviser

Department of Sociology

Tracy L. Scott

Adviser

Corey Keyes

Committee Member

Jill Welkley

Committee Member

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Marissa K. Pham

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Abstract

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This study explores the health behaviors of health and non-health undergraduate majors at Emory University. Thirty semi-structured, in-depth interviews were conducted with fifteen health and fifteen non-health undergraduate majors at Emory University, a highly-ranked elite institution in the southeastern United States. In addition to looking at differences in health behaviors between groups, barriers and facilitators to health behaviors were identified with special attention paid to the effects of stress on health behaviors. Results showed negligible differences between health and non-health majors' health behaviors, with both groups engaging in similar habits. Stress, time, convenience, family, peers, and internal barriers were identified among participants, with stress and time being expressed as the most detrimental. Family influence, peer influence, internal motivation, learned in school, and positive stress facilitators were identified to be most significant among participants. Internal motivation was found to be the biggest facilitator for non-health majors, while family influence was the biggest facilitator for health majors. Overall, stress was a major hindrance to health behaviors among all participants and was often experienced as competition with peers, lack of time, and overarching pressures to succeed.

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Figures, Tables, and Appendices

I. Introduction

Throughout my four years of college at Emory University, I have witnessed a wide spectrum of my peers' health behaviors ranging from extremely health conscious to extremely destructive. I found it interesting that I often saw the worst behaviors coming from those who study health and medicine. Implicit in the fact that these students are also enrolled at an elite institution, I became curious about how different groups differ regarding their everyday health behaviors. Moreover, I did not just want to know the differences, but I wanted to explore what factors lead students to engage or not engage in health behaviors, as well as how their behaviors affect them. Previous research shows associations between health behaviors of college students and factors such as happiness (Peltzer & Pengpid, 2010), effective coping mechanisms (Karadağ & Yildrim, 2013), anxiety levels (Shadi, Peyman, Taghipour, & Tehrani, 2018; Saleh, Camart, & Romo, 2017; Bandelow & Michaelis, 2015; National College Health Assessment, 2018; Eagen, Bara-Stolzenberg, Zimmerman, Aragon, Whang-Sayson, & Rios-Aguilar, 2016), and many others, which inspired me to dive deeper. Through this study, I hope to give insight into health behaviors of students at Emory University. My research focuses on differences between health behaviors of health and non-health majors, as well as identifies barriers and facilitators to their behaviors with a specific focus on stress as a barrier.

II. Theoretical Framework, Empirical Research Background, and Research Questions

There are many theories, across a number of disciplines (psychology, sociology, public health), seeking to explain individuals' health behaviors. Depending on the discipline, these theories tend to focus on psychological factors, social context factors, or a combination of both

in an effort to explain why some individuals or groups engage in health behaviors more than others.

My research study focuses on a specific social group (college students) and explores how college students understand and talk about their own health behaviors. Because this study is exploratory, I focus on factors particular to the social context of college, as well as factors established as important in past empirical research, and seek to understand how these factors shape students' lives in terms of their health behaviors. I use a more inductive approach to understand the place of health behaviors in students' lives, while framing the research against the backdrop of existing broad theoretical traditions and empirical research on health behaviors. I will now discuss the important strands of research that frame my exploratory study and research questions.

Health Education

Though a specific theory has not been identified to explain health education's impact on health behaviors, a large body of research points to the effectiveness of health education on health behaviors, mostly suggesting education's effect on changing a specific health behavior. Major studies find that people who have had more health education might be practicing these behaviors more than those who have not, especially when it comes to nutrition. Lee, Jin, and Kim (2013) studied college students in the United States and South Korea. Their quantitative study looked at the relationships among nutrition knowledge, health concern, and behavioral intention. They found that knowledge about nutrition and behavioral intention were positively correlated, meaning that students who recognized an importance for good nutrition were also practicing that knowledge in their food choices. Similarly, Fu and Jien (2007) studied the effect

of enrollment in a nutrition course for non-nutrition major students at a university. Pre-test and post-test analyses showed a significant increase in student nutrition education after the nutrition course intervention.

Furthermore, Hekler, Garnder, and Robinson (2010) studied the effects that enrolling in a college course about food and society had on college students at a university in California also using quantitative methods. After taking the food and society course, participants reported significant improvements in vegetable intake and decreased high-fat dairy intake. Participants also showed improvements in decreasing the amount of sweets and high-fat meals that they consume. Overall, taking a food and society course improved health behaviors related to nutrition and students expressed an increase in their beliefs about the importance of healthy diets. Singh, Raghuvanshi, Verma, and Jantwal (2015) also looked to increase the knowledge around food. They explored the impact of nutrition education on a sample of teen girls in India. Using a pre-test and post-test analysis, the researchers were able to see the influence of lectures and discussions on knowledge of nutrition and health. Results showed an almost 50% increase in the girls' knowledge of nutrition after lessons.

A study by Brown, Wengreen, Vitale, and Anderson (2011) implemented an intervention for college students' vegetable intake through a college nutrition course that required students to complete online nutrition modules and attend a vegetable tasting at the local farmer's market. Comparison of pre-intervention and post-intervention surveys of vegetable intake, readiness to increase intake, and self-efficacy of vegetable preparation showed that students went from contemplating an increase in vegetable intake to preparing their increase in vegetable intake. Students also showed increases in self-efficacy for preparing vegetables. Ha

and Caine-Bish (2009) also looked at the effects of implementing an intervention in a nutrition course on promoting fruit and vegetable intake in college students. Using interactive and hands-on activities, the researchers provided education to students about healthy dietary behaviors and their effect on chronic disease prevention. Post-test results from the study show that learning about good nutrition increased student consumption of not only fruits and vegetables, but fresh fruits and vegetables. Student intake of French fries and other fatty foods also decreased as a result.

Babinski, Murray, Wilson, Kuhn, and Malone (2018) studied the impact of a neuroscience education class in high school students, specifically looking at their health knowledge, beliefs, and behaviors post-intervention. Post-test results showed a significant increase in not only neuroscience knowledge, but students were more apt to talk about the importance of caring for their brains. Other studies have found that health education improves specific health outcomes or conditions, such as hypertension (Haryani, Subiyanto, & Suryani, 2016), iron deficiency anemia (Jyoti & Dubey, 2016), osteoporosis (Park, Yoo, Kim, Jang, Park, & Ha, 2017), and menopause (Asghari, Mirghafourvand, Charandabi, Malakouti, & Nedjat, 2017).

Given the previous research pointing toward a positive relationship between health education and health behaviors, my first guiding research question is: *Do health behaviors of students with health majors, such as human health and pre-medicine, differ from those of non-health majors?*

College Context Factors

Because this study is exploratory rather than causal or experimental, I also investigated other areas of life that students mention as relating to their views and practices of health

behaviors in the forms of barriers and facilitators. A study by Greaney, Less, White, Dayton, Riebe, Blissmer, Schoff, Walsh, and Greene (2009) conducted a qualitative study on barriers and enables of healthy weight management in college students. They found that three categories were used by participants: intrapersonal, interpersonal, and environmental. Intrapersonal barriers consisted of temptation and lack of discipline. Interpersonal barriers included students' social situations and peer influences. Environmental barriers were comprised of things like time constraints, ready access to healthy food, and campus resources available. The same three elements described by participants as barriers were also identified as possible enablers of healthy weight management. Intrapersonal enablers were personal decisions to be physically active and eat nutritious foods. Interpersonal enablers were peer support and encouragement. Environmental enablers were campus resources that promoted healthy weight management and lifestyles. The authors found that even with both barriers and enablers present in the college environment, the barriers carried more influence in participants. Additionally, factors viewed by some students as barriers were used as enablers for others.

Another qualitative study by Townsend, Williams, Wickramasinghe, Karunarathne, Olupeliyawa, Manoharan, and Friel (2015) explored secondary school principals' perceptions of barriers to healthy eating decisions of their pupils. The study identified structural level barriers, living and working level barriers, and individual barriers to healthy dietary choices. Within structural barriers, respondents stated that national nutrition education was lacking and likely contributed to unhealthy food choices in secondary school students. Living and working level barriers consisted of readily available fast food nearby schools, individual school curriculum not making room for nutrition education, social and cultural beliefs about what foods are suitable

to eat, and family influence regarding parent behaviors leading to unhealthy choices in their children. Individual level barriers to healthy eating decisions were preference for unhealthier foods and lack of knowledge about which foods are nutritious.

Further research shows agreement with the aforementioned findings on barriers and enablers to health behaviors. A study by Musaiger, Al-Kandari, Al-Mannai, Al-Faraj, Bouriki, Shehab, Al-Dabous, and Al-Qalaf (2014) also investigated barriers to physical activity and good nutrition of university students in Kuwait using surveys and quantitative analysis. The main barriers to eating nutritiously dealt with not having the skills to plan, shop for, or prepare healthy foods, as well as not having the time to do so. Explicitly stated barriers to physical activity included not having the time to exercise and weather conditions of Kuwait making physical activity outside not ideal. Various other studies also concluded that lack of time was a huge constraint for participants regarding practicing health behaviors (El-Bagoury, Hassan, & Abouseif, 2017; Smart, Chisum, Robertson-Pfeffer, & Tsong, 2015; Gòmez-Lòpez,Granero Gallegos, & Baena Extremera, 2010).

Negative peer and family influences have been detected to be barriers for health behaviors. Pelletier, Graham, and Laska (2014) studied social norms and their influence on dietary behaviors. The findings show that friends, family, and significant others play a major role in consumption of fast food. Sugary beverages were also consumed more by participants if their friends and family did so. Moreover, friends were the biggest influence on consumption of fruits and vegetables and personal preparation of dinner. Lack of social support by peers for health behaviors does not only affect dietary behaviors, but also decreased physical activity (Gòmez-Lòpez, Granero Gallegos, & Baena Extremera, 2010) and increased alcohol intake

(Skinner & Veilleux, 2016; Simons-Morton, Haynie, Liu, Chaurasia, Li, & Hingson, 2015). Furthermore, lack of family encouragement of heathy behaviors such as lowering consumption of alcohol has also been shown to be a barrier (Varvil-Weld, Crowley, Turrisi, Greengerg, & Mallett, 2014). Contrarily, peer and family influences have also been shown to be facilitators of health behaviors. Studies show an influx in use of peer mentoring programs for students as opposed to traditional teacher-classroom health education because it has been found to be a more effective means of student information retention and learning (Smith, Petosa, & Shoben, 2018; Jerome, Baker, & Fang, 2018). Family influence is shown to be important in students avoiding alcohol use and overuse problems (Varvil-Weld et al., 2014; Simons-Morton et al., 2015).

Internal barriers to health have been studied widely as well. Findings for internal barriers deal mostly with personal preference and temptation (Wippold, Tucker, Smith, Rodriguez, Hayes, & Folger, 2017; Townsend et al., 2015; Greaney et al., 2009; Gòmez-Lòpez,Granero Gallegos, & Baena Extremera, 2010), not having the proper education (Gòmez-Lòpez,Granero Gallegos & Baena Extremera, 2010; Townsend et al., 2015; Musaiger et al., 2014), and difficulty coping with stress (Skinner & Veilleux, 2016; Simons-Morton et al., 2015). Stress is an increasingly large topic in research about college students because of its negative effects and is found to stem from academic performance, pressure to succeed, and having a plan for after graduation (Beiter, Nash, McCrady, Rhoades, Linscomb, Clarahan, & Sammut, 2014). Stress barriers hinder students from practicing healthy sleep habits (Valerio, Kim, & Sexton-Radek, 2015), being physically active, avoiding high fat diets, and cigarette smoking (Ng & Jeffrey, 2003).

This leads me to my second research question: *What other facilitators and barriers do students discuss, and do these other facilitators and barriers differ between health and non-health majors?*

Stress

More specifically, this study focuses on stress as a factor that has been shown to affect college students' lives in many areas. Using acute stress and chronic stress as reference points, Blair Wheaton and Shirin Montazer (2016) consider stress in a Two-Way Classification where one can imagine a continuum of stress types. In the first dimension are the types of stress, including daily hassles, nonevents, traumas, and contextual stressors. Daily hassles are the irritating, annoying, and bothering demands that to some level characterize everyday encounters with the environment. For a college student, this could be tedious homework assignments, getting stuck in traffic on the way to class, losing a student ID, or being redirected due to construction on campus. Nonevents are what Wheaton and Montazer (2016) see as events that are desired or anticipated that do not occur, or when an event occurs to another group but not one's own. For a college student, this could be not getting a summer internship, expecting an A and getting a C on an exam, or not getting invited to a friend's birthday party. Daily hassles and nonevents are things we often do not think about as stressors, but an accumulation of distress from these could lead to something bigger.

The DSM-5 (American Psychiatric Association, 2013) defines traumas as direct personal experiences of an event that involves being the subject of, witnessing, or being close to someone with threatened death or serious injury to their physical integrity, often occurring spontaneously. Traumas are thought to involve intense fear, helplessness, or even horror.

Another form of trauma that college students are likely to experience is “a fundamental and comprehensive challenge to the personal foundational meanings that guide and support social like and personal identity” (Wheaton & Montazer, 2016, p.191). Traumas that some college students deal with could be losing a parent, losing their home to natural disaster, childhood exposures to abuse, and even education enlightening them to a truth they have never encountered before. Overarching daily hassles, nonevents, and traumas could be contextual stressors, or exposure to threats resulting from common affiliation in social groups, where each member is vulnerable to all shared threats and challenges merely by involvement in that group (Wheaton & Montazer, 2016).

Wheaton and Montazer (2016) identify a second dimension in their Two-Way Classification that allows us to visualize stress on the micro, meso, and macro levels. Micro level stressors effect only the individual, such as distress from busy-work, not getting an internship, or a serious injury. Meso level stressors happen within a small network of people, like a family or a friend circle. Stressors on the meso level could include the death of a father within one’s family or expecting funding from the Student Government Association for a new club that never comes. Both affect a small group of people, but do not make waves in the larger environment. Lastly, macro level stressors affect the greater environment, such as states, nations, and large institutions. If the nation goes bankrupt or goes to war, everyone who lives there suffers consequences. If a college campus invokes a policy that students must attend Saturday classes, everyone in the system is affected. By introducing the Two-Way Classification, Wheaton and Montazer (2016) maintain that there are no fundamental stressors that absorb and express the impacts of all other sources of stress, which is why we must take all sources into consideration.

Using the Two-Way Classification of stress, we can see the possible underlying causes of the rising anxiety and stress in college students. In Jean Twenge's (2000) longitudinal study, college students have been reporting their own rising rates of anxiety since 1952. She noticed an increase in self-reports of anxiety starting in the 1950s that have been rising linearly ever since. Like the second dimension of Wheaton and Montazer's Two-Way Classification, Twenge (2000) concluded that student stress is a result of not only individual (micro level) and family (meso level) stress, but a larger sociocultural (macro level) stress. She found that low social connectedness and high environmental threat, both meso-macro level stressors, have led to an increase in anxiety among students. Students are experiencing lower levels of social bonds and attachment to others, as well as a larger threat coming from their environment which increases their anxiety.

Along with Twenge's research on possible reasons for rising levels of anxiety and stress in college students comes a plethora of other hypotheses. Various studies mention that anticipation or worry of failure and pressure from parents and teachers may contribute to the rising levels of anxiety, especially in women who feel that they need to work harder to make themselves equal to their male counterparts and accomplish what they set out to do (Shadi et al. 2009; Saleh, Camart, & Romo, 2017; Bandelow & Michaelis, 2015; National College Health Assessment, 2018; Eagen et al., 2016). Additionally, the cost of higher education continues to be a stressor for many college students (Eagen et al., 2016; Ramjiit, 2017; National College Health Assessment, 2018). Not only is college more expensive than it used to be, there are a high number of first-generation Americans and non-traditional college students that find paying for college more burdensome than it needs to be (Ramjiit,2017; Eagen et al., 2016). Some

research suggests that a student's academic degree could lead to increased stress (Shadi et al., 2018), while other research has found a negative correlation between cell phone use and academic performance and a positive correlation between high cell phone use and levels of anxiety (Lepp, Barkley, & Karpinksy, 2014).

Considering the above hypothesis for the rising stress and anxiety in college students, a study by Giancola, Grawitch, and Borchert (2009) looked at the relationship between interrole conflict and anxiety of students. Students used to be able to focus more on school and less on having a job on the side, but now more students juggle school, work, family, and societal expectations to juggle. With the growing demand in higher education to do well in school, be well-connected to your family, work part-time in a lab or other internship, and get a job that is better than entry-level right out of college has students finding conflict between the roles they hold. Giancola, Grawitch, and Borchert's (2009) research showed that there is interrole conflict among all these things, but the conflict is highest between school and expectations and demand from family.

After reviewing the literature on stress, I specify my interest further to propose a third question: *Does a student's college major affect the way stress relates to health behaviors?*

III. Methods

I chose to use in-depth qualitative interviews to investigate my research question because the types of responses I was searching for could not be found via quantitative methods. My question looks to dive into why students engage in specific health behaviors and how they rationalize those behaviors, which meant that open-ended and thoughtful responses

were necessary. The Wiley Blackwell Encyclopedia of Health, Illness, Behavior, and Society (2014) defines health behavior as:

> The activity undertaken by individuals for the purpose of maintaining or enhancing their health, preventing health problems, or achieving a positive body image. It is not limited to healthy people trying to stay healthy, but also includes the physically handicapped and persons with chronic diseases who seek to control, minimize, or contain their affliction through positive forms of health behavior, such as diet, exercise, and avoiding smoking. –**William Cockerham, The Wiley Blackwell Encyclopedia of Health, Illness, Behavior, and Society**

For the purposes of this study, references to *health behavior* will follow the above definition, while *unhealthy behavior* will refer to behaviors that oppose the above definition. Previous research has already explored what kinds of behaviors students engage in, I want to know where their motivation comes from and how they think about their own health behaviors. I hope to expand on previous research by adding a more subjective and personal take on students who live and study in a prestigious and intellectual academic environment.

Sample

Participants were recruited through convenience sampling, selected based on their affiliation with a Greek organization in either the National Panhellenic Council (female participants) or the Interfraternity Council (male participants) as a controlling factor. All participants were either currently active in Greek life at Emory University (24), or they were currently inactive, but were active for at least half of their college experience (6). This study observed a sample of thirty Emory University undergraduate students, fifteen females and fifteen males, who are at least 18 years old. The university is in Dekalb County, Georgia, in the southeastern United States. The population was not vulnerable, as all participants included in the sample are over 18 years of age. There are no specific exclusion data.

Procedure

In-depth, semi-structured, face-to-face interviews were conducted in private areas agreed upon by both the participant and interviewer. Participants were asked to sign an informed consent document upon arrival where the interviewer highlighted the voluntary nature of the study and answered any clarifying questions. Interview times varied greatly among participants based on length of responses, so they ranged from 32 minutes to one hour and forty minutes in length. Interviews were recorded with participant consent and transcribed by the interviewer where all participants were given a pseudonym to protect their confidentiality. Participants were not offered compensation for their time, and there were no foreseeable benefits or risks of participating in the study.

An interview guide was utilized in semi-structuring the interviews. All interviews began with the same prompts and then progressed based off participant responses. No two interviews were the same. Interviews discussed the participants' attitudes about health behaviors, engagement in health behaviors, experience with health education, and current and past background.

Data Analysis

Using MAXQDA software, thirty interviews were coded and analyzed. The current study is exploratory and inductive, meaning the research question was derived upon data collection. Once the research question was established, subjects were divided into two groups, health major and non-health major. There were 15 subjects in each group. Next, codes were created within broader categories of *Barriers* and *Facilitators* to health behaviors and applied to each interview. Data analysis was both deductive and inductive. Codes were established by taking

themes from previous literature, then other common themes were identified in participant responses. The six *Barrier* codes were *Stress*, *Time*, *Convenience, Peers, Family,* and *Internal Motivation.* These were used to categorize expressions of inability to perform health behaviors. Initially, three sub-codes were created under the *Facilitator* code, including *Family Influence*, *Peer Influence*, and *Learned in School*. After finding common trends within responses, *Internal Motivation* and *Positive Stress* were added to the *Facilitator* code used to categorize expressions of where health behavior influence came from.

Word clouds were generated to visualize frequencies of codes between each group. The bigger words in the cloud signify higher frequency of codes, while smaller words signify smaller frequency of codes. Word clouds were created for health major barriers, health major facilitators, non-health major barriers, and non-health major facilitators. Additionally, word clouds included tables signifying the number of times each code was used in each group. Co-occurrences of codes were analyzed using a code relations function, which generated a table depicting the codes and the number of codes that overlapped.

IV. Results

Participants ages ranged from 19-24 years old. Fifteen participants were health majors and fifteen participants were non-health majors. Twenty-two identified as white, three identified as Asian, three identified as Asian-Indian, one identified as Latino, and one identified as biracial. Additionally, three of the thirty participants identified as homosexual (see Appendix A).

Research Question #1: Do health behaviors of students with health majors, such as human health and pre-medicine, differ from those of non-health majors?

Although previous research shows associations between health education and health behaviors, this study found that participants with health majors and non-health majors alike engaged in both health behaviors and unhealthy behaviors. Most particpants described having a knowledge of health behaviors and had a good sense about how to personally achieve those behaviors, but they encountered barriers when it came to applying those behaviors every day. Barriers in this context were defined by participants as situational *priorities*. Participant priorities typically boiled down to a choice between doing well in school and maintaining health behaviors, with the former winning out in the end.

The pre-medicine education track did not seem to have much of an influence. For Katherine, choosing school over health meant considering the cost of higher education and choosing not to apply the things she learned in her pre-medicine classes:

> [referring to her biggest barrier to practicing health behaviors] Wanting to prioritize school over health, and I don't see that priority changing in college at all. So, I think that makes it difficult because I'm spending so much money to be here for school that I should invest like equivalent portions of my priorities into school... I have all the information it is just a matter of prioritizing it and having the time to do it. –**Katherine**

While Katherine's reason for prioritizing school over health was based more on return on investment, other pre-medicine participants added that feeling ill-prepared for class, wanting the best for their future career, or not having time made it easy to put health behaviors on the backburner. Those who described the latter barrier said that they had the resources and knowledge to practice health behaviors, but did not prioritize health behaviors because the environment of college made it difficult. According to Adam, the demands of the pre-medicine

track did not promote health behaviors because medicine only teaches you “how not to die.” When referencing his pre-medicine major and health behaviors, Jason said:

> I sometimes don't find it conducive to that and the demands and the stress that it puts on me, I don’t find it conducive so it's like two sides. I just learned about stress for my last physiology exam but did that really change...like I just know what's going on in my body. For example, in BIO 142 at Oxford we learned that bad daily habits can methylate your DNA and can change it and stuff but did that help me? No. It's giving me the tools just not the environment to play it out. –**Jason**

The consensus between groups about practicing health behaviors in college was that Emory gives everyone the resources to be healthy, including requiring that everyone take HLTH 100 during their first year, promoting the various supporting offices for health on campus, and making condoms and hand sanitizer ubiquitously available, but students must *choose* to prioritize health behaviors.

Before participants described their specific health behaviors, they were asked to rank sleep, diet, physical activity, and mental wellbeing in order of most important to least important to them. They were asked not to rank them in accordance with their ideal world, but in the order that they start slipping into the background when things become crunched for time or stressful. Every participant had an answer regardless of major, and everyone knew what they give up on first when things become stressful. Ten participants said they initially give up mental wellbeing and taking time for themselves in times of stress, and nine participants gave up sleep first, often describing the two as going together and largely affecting the other. Some participants had one health behavior that they never give up on and others realized that they let go of all of them simultaneously when stressed. Most participants reported that the order they listed is not necessarily how much they value each behavior, but only the order in which

they get pushed to the side. While ranking her behaviors, Emma guided me through her reasons for pushing certain behaviors to the backburner before others:

> I think exercise is the last thing I'll give up, because even doing a half an hour hard core HIIT thing or sprinting gets me immediately feeling better. I go from a moment of feeling stressed to not feeling stressed. I think probably sleep is the next one even though I am still prioritizing academics over sleep. On the weekends if I'm tired, I will sleep. I'm not one of those people that gets really tired and keeps going, I'll definitely get enough sleep because I function so much better. I think food is one of those things that I would like to say I prioritize it all the time and I'm always thinking about it, but that's not necessarily the case, especially around times of stress. When I'm not stressed out it's really easy to maintain that, but when I am, it's one of the first things to go. I think overall mental wellbeing is kind of just in my head too intangible to keep top of mind. Where tangibility is like I went and exercised, or I got this much sleep, or the food thing. You can measure those a lot more, so I think because it's something I can't measure very well it's at the bottom. –**Emma**

Results show that having a health major or non-health major did not necessarily play a large role in practicing health behaviors among these participants. In fact, participants in both groups experienced similar struggles and placed heavy importance on where their priorities lie.

Research Question #2: What are the barriers and facilitators to health behaviors? How do they differ between health majors and non-health majors?

Participants described both barriers and facilitators to their health behaviors. The barriers identified included: stress, time, convenience, peers, family, and internal. The identified facilitators included: family influence, peer influence, learned in school, internal motivation, and positive stress.

Figure 1: *Health Major Barriers*

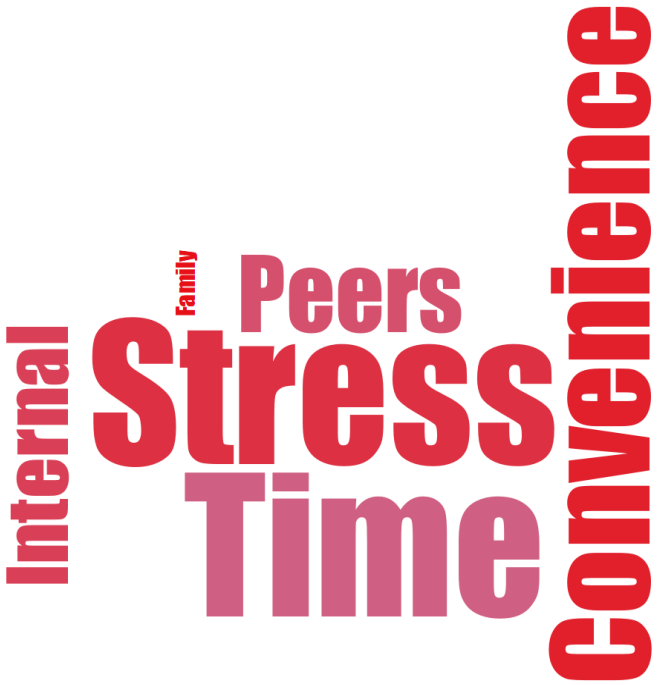


Figure 2: *Non-Health Major Barriers*

Results from the barrier word clouds for health major and non-health major groups were the same in terms of the order of influence, as shown in Figures 1 and 2. Both groups found their main barrier to be 1) stress, followed by 2) time, 3) convenience, 4) peers, 5) internal, and then 6) family. Differences were found in the overall numbers of each barrier. The number of times that any barrier was described in the health group was 420, while the non-health group had 396. Health majors described more overall barriers from stress and time than did non-health majors. Non-health majors described more barriers from internal motivation than health majors (see Table 1).

Table 1: *Barriers to Behavior for Health and Non-Health Majors*

Barrier to Behavior	Health Majors	Non-Health Majors
Stress	111	98
Time	111	92
Convenience	78	78
Family	13	13
Peers	59	58
Internal	48	57

When describing family barriers to health behaviors, non-health majors described more parental behavior influences, such as not cooking healthy foods or not caring about health. Mike recounted his mother's inability to cook when he was growing up. His family ate most dinners at a sports bar with mostly fried food where kids ate free. If they did not go out for dinner, his mother would heat up Lean Cuisines for him and his siblings at home. Only within the health major group did participants describe a parental pressure to succeed that was dictating their behaviors.

Natalie, on the other hand, experienced a parental influence geared more toward pressure and expectation:

> The way I was raised I always felt like I had to be doing something for the future, and like if I wasn't devoting a large portion of my time to being productive, it was kind of frowned upon by my parents. –**Natalie**

When describing peer barriers, non-health majors talked more about social influence of direct engagement in unhealthy behaviors than did health majors. Participants described pressures to stay up later, binge drink, use drugs, and often felt a fear of missing out if they were not involved in what their peers were doing. Sarah expressed that she is more likely to sacrifice sleep to hang out with her friends and push her homework off to a different time. John talked about a peer influence that led him to consume a lot of alcohol on a weekly basis, conveying that he would not consider himself an alcoholic, but having fun with friends in college often leads to drinking alcohol. A few participants also mentioned that being involved in a Greek organization heightened that pressure to engage in the unhealthy behaviors of some of the other members.

Health majors talked more about social influence of competition with peers and comparing themselves to what their peers are doing. Non-health majors also referenced competition, but the only specific comparisons were made by participants in the business school regarding jobs after college, not the immediate stressors in college. Health majors alluded to a stress-inducing competition between themselves and others, especially those within the pre-medicine track. Julia told a story about the competition between pre-medicine participants for internships, volunteer opportunities, and research assistantships. One of her good friends who is also pre-medicine wanted to fill in for Julia while she went back home over the summer, but Julia said no. She explained that the lab assistant job she has is difficult to

come by and she got it by herself. Julia wanted what was best for her friend, but when it came to a decision between her own future and her friend's, she had to choose herself.

Jason took the competition barrier in a different direction. Instead of feeling pressured to be involved in everything that his peers are, he felt that other people had their lives under control from every front:

> Just the competitive aspect of college and the concentrated area of people who are high achieving, who have a destination that they want to get to. And because it's not just the average person… it becomes a competition. Like who am I envious of? I'm envious of a person who can do sciences and have a proper sleep schedule, and do sciences or... not even. Just be a college student who has a proper sleep schedule and eating schedule… I only know being a premed student because it's what I began as, hopefully it's what I'll end as, in these final two years. So it's like you have college, and then you have people who do science, and then you have pre-meds… So that's all I know, and that's all I've been programmed with. So it's comparing...it's been like a constant comparison of other people to me. --**Jason**

Health majors may be the only ones who expressed feeling heightened competition between them and their peers, but non-health majors felt the effects of it. Mark studies business but has had interactions with pre-medicine majors who insinuated that because he did not study hard science, his work was not as hard as theirs. He expressed his confusion about what real work is to them, and made a comment on how he actually went outside and saw the sun that day unlike them, alluding to their being camped in the library.

Both health majors and non-health majors described priorities, habits, and admitted procrastination as internal barriers to health behaviors. The main distinguishing factor between them is that non-health majors had significantly more overall descriptions of this barrier than health majors. In general, many participants explained that they are unable to motivate themselves unless there is a small and closing time window. Mike described himself as a "serial procrastinator" who can only do work when there is an immediate pressure to work. He will

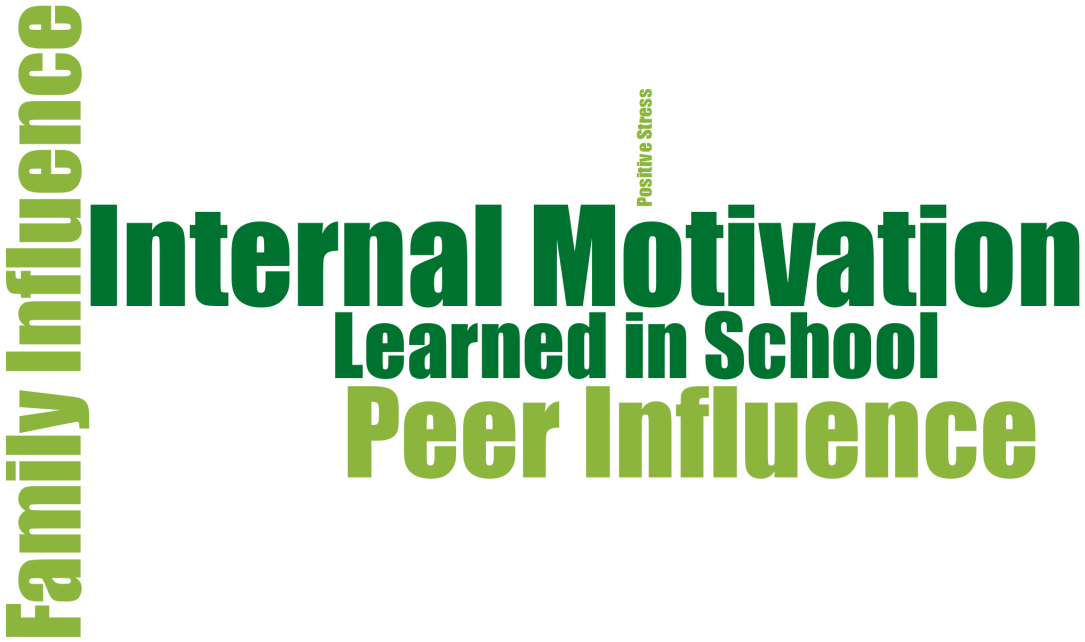
often be aware that he has a test coming up and acknowledge that he should study, but then allow himself to get engrossed in anything else, ranging from a basketball game that he has no real interest in to scrolling through Twitter until he has exhausted any new material in his feed.

When participants were asked what they thought their biggest barrier was to changing health behaviors, getting out of deep-rooted habits seemed to be a hurdle. Abby expressed an aversion to structure and a tendency to make impulsive decisions that hinder her health behaviors. She believes that her other personality traits fight her ability to make conscious decisions about doing things she does not actually want to do, such as eat vegetables. Many also stated that they think engaging in health behaviors will come more easily after college and once they have started their careers. Katherine hopes to attend medical school after college and does not currently prioritize her health but seems to think she will have time to prioritize it when she has a job and a regular schedule.

Results from the facilitators word cloud for health majors are shown in Figure 3. Health majors found their biggest facilitators to practicing health behaviors to be: 1) family influence, 2) internal motivation, 3) learned in school, 4) peer influence, and lastly, 5) positive stress. Non-health majors found their biggest facilitators to be: 1) internal motivation, 2) peer influence, 3) family influence, 4) learned in school, and 5) positive stress (see Figure 4).

Figure 3: *Health Major Facilitators*

Figure 4: *Non-Health Major Facilitators*



As shown in Table 2, health majors had more overall facilitators to health behaviors than did non-health majors. Health majors had mostly family influence facilitators, while non-health majors were influenced mainly by internal motivation. Even though earlier results point to similar behaviors between health and non-health majors, health majors did indeed have more school influence than non-health majors.

Table 2: *Facilitators to Behavior for Health and Non-Health Majors*

Facilitator to Behavior	Health Majors	Non-Health Majors
Family Influence	41	28
Peer Influence	30	35
Learned in School	33	25
Internal Motivation	34	39
Positive Stress	5	4

Family influence facilitators were seen significantly more in health majors than in non-health majors. Most family influence was around diet and exercise behaviors for both groups. Many health majors alluded to their parents instilling health behaviors in them without their noticing. Participants applauded their parents for subtly teaching them about health behaviors and still think about what their parents encouraged when they make decisions today. The health majors often directly attributed their currently health behaviors to what their parents implanted in them and expressed wanting to do the same for their children. Natalie stated that she believes her behaviors have not changed since she left home and that she feels more influenced by her parents than her peers when it comes to health behaviors. Abby praises the knowledge that her parents instilled in her:

> I think my parents did an absolutely fabulous job of encouraging really healthy behaviors. I think I took the ones that I wanted to and used those and the other ones. I think about those past experiences and I think 'I should be doing that, why am I not doing that, I should be doing that.' –**Abby**

Learned in School facilitators were more prevalent in health majors, but not in the way one would expect. The *Learned in School* code encapsulated any time a participant regarded information as learned in college, which includes not only information from health education, but also learning about themselves because of the pressures and responsibilities placed on them. In that regard, non-health and health majors had similar experiences with both sub-categories. Maddy, an English and creative writing major, talked about her experience in a psychology class influencing how she views sleep. After learning about the effects of losing sleep in class, Maddy never pulled an all-nighter because she viewed sleep as genuinely more important than studying. Similarly, Will, a political science student learned about the effects of recreational drugs in one of his science requirements. He had learned from his parents at a young age that drugs were bad, but learning about the ramifications of using them through a scientific lens convinced him of the negative outcomes.

A majority of participants felt a greater awareness of their health since attending college. Julia and Anna said that reading scientific articles about many aspects of healthy living in their human health classes gave them a new perspective on their own health and allowed them to consider things that they never had before, like sleep hygiene, mental health, and long-term complications of certain behaviors. Alison stated that being in college helped her focus more on mental health and becoming her own person:

> I didn't consider how important mental health is in general until college. I would say there's definitely a change when I left high school to college. Like, oh wow… you have to make a conscientious decision about healthy habits, whereas in high school those were just kind of there and provided for. But now I'm in a place where I can make all these grown-up decisions, and I'm conscientiously choosing things. Like I could go out tonight, but I could also study and get more sleep now than tomorrow night before my exam. –

Alison

Additionally, many participants from both groups reported that they learned more about the importance of mental health while in college, indicating that it was not something that was largely discussed in their high schools or at home. Some participants mentioned that they have been close to people with eating disorders or other mental illnesses in college and that taught them a lot about the importance of mental health. Will and Brandon talked about not having much exposure to stress while growing up. Coming to college raised a lot of questions about Brandon's own strategies for good mental health:

> Mental wellbeing I've had more of an emphasis on since high school, like that's something that we didn't discuss as much at home. Also, I was so sheltered growing up. I was so sheltered in the sense that I had a great upbringing, it was all like apple pie American family. It's actually scary though. I'm very very blessed. I also didn't have to think about...we never talked about what it means to be super stressed and how you can attack that and remedies. Especially when you come here, I feel like it's all so much and it can be very stressful. Like how do you take care of yourself beyond the basics of sleep, food, exercise? Like learning whether you're an introvert or extravert… and like [Brandon] time. That was a concept that I did not know about until college. –**Brandon**

Regarding internal motivation facilitators, both groups said similar things about knowing themselves and what works for them better than they did in high school while living with their parents. Many of them reflected back on college and realized that their motivation for practicing certain health behaviors shifted from extrinsic to intrinsic. Before college, participants' lives were mainly influenced by their parents. College allowed them to experiment with behaviors that work for them and understand how to motivate themselves. John expressed excitement in finding internal motivation for health behaviors, likening himself to a bird who can finally "fly without his mom."

Though people in both groups had a lot of internal motivation for practicing health behaviors, only non-health majors described a strong resistance to unhealthy influences. Andrew described a situation with his girlfriend who was trying to get him to smoke a cigarette. Every time she tries convincing him to smoke a cigarette, he says “no” and stands firm in his beliefs. Andrew said he does not care if others do not agree with his decisions, because it will not stop him from doing what he believes is right for his health. Emma and Nathan, both seniors studying business, describe aversions to participating in the workplace culture of big business. Emma in particular has opted out of going into the business world, stating that the long hours and endless demands of a corporate job are too unhealthy and she does not want to be involved in it. Will voiced his resistance to overstress and described it as not worth it in the long run:

> For me, being happy is much more important than being unhappy and having a 4.0. Doing well in school is one aspect of my life. That is obviously a very important aspect, but it's not my life itself. How well I do at Emory is not going to define who I am. I think that a lot of students think that is not the case, and how well they do as Emory is going to define who they are. I just think that you can think about all the people who go to Harvard and don't do anything with their life, or don't do as well, and all the people who go to community colleges or like random state schools and found these billion dollar companies. Like I think college is a time where education is at the epicenter of your life, but it's not necessarily your entire life, and I think that keeping that in mind helps me remain not as stressed. Because I’ve heard people say the expression like ‘Are you really going to remember how well you did on this one test in like 10 years or 20 years or even like 5 years?’ You're like ‘hell no.’ Like I’ve definitely cried about tests before but I don't even remember what tests it would be about anymore, you know. So just keeping in mind that it doesn't matter in the end is important. –**Will**

Research Question #3: How does a college student's major affect the way stress relates to their behaviors?

Overall, both health and non-health tracks affect the way participants' stress relates to their behaviors in similar ways. When Emma, a business student, was asked if she thought a different major would have made her college years easier, she replied:

> I think about that all the time. The past four years would be pretty similar. My friends who are pre-med and my friends who are pre-health all these different concentrations, I think we all pretty much work the same amount in terms of when effort is required or when different areas of stress are required, yes that is different...but I think Emory students across the board all have different workloads they are all super busy they like to be busy they like to be smart they like to be doing things so I would say it doesn't necessarily matter what your major is it's just the fact that you're in this environment. – **Emma**

Stress and time were the highest co-occurring barriers in all interviews (see Table 3). All participants described a direct relationship between how stressed they are and how much time they have to do everything that is expected of them. Nicole explained that her stress does not come from only one thing, her stress stems from a series of stressors that pile up on top of the last and she feels that she is trying to do so many things in a period of time that is not big enough. A majority of participants said the way their classes' exam schedules go, there is a short period of time every other week or every few weeks where they have an assessment in every class. Some participants thought this was their professor's doing. Daphne recalled a time when her friend was assigned 700 pages of reading to do in one week. That by itself would have been enough work, but she also had other classes' work to do. Daphne and Mike proposed that professors do not realize that their class is not the only class that students are taking and do not realize that students have lives outside of school work.

Table 3: *Co-Occurrences of Barriers to Health Behaviors Among all Participants*

Barrier	Stress	Time	Convenience	Family	Peers	Internal
Stress		49	16	4	38	27
Time	49		31	--	15	31
Convenience	16	31		--	2	4
Family	4	--	--		2	2
Peers	38	15	2	2		6
Internal	27	31	4	2	6	

Stress stemming from being involved on campus while also doing well in school came up in a lot of interviews. Jane interned for Stacey Abrams, the democratic gubernatorial candidate in Georgia. When the interviews were being conducted, she was in the midst of the busiest time of year for not only her internship, but the clubs she was part of on campus. When asked if she ever has alone time, she said that there is too much going on around her to take time for herself even though she wishes she could make time for it. Most participants mentioned feeling like they were being stretched too thin between the things that they *need* to do, such as homework, and the things they *want* to do (such as being active in an extracurricular organization).

Stress and peers were the second highest co-occurring barriers for all interviews (see Table 3). A majority (19/30) participants directly mentioned competition among peers as a major stressor. For Natalie, the constant competition among peers at Emory led her to feeling more stressed than not stressed while in college. When asked what the Emory University culture is like, she responded:

> It's kind of very high pressure and very competitive. I find that Emory is a very pre-professional undergraduate school which is funny because it's liberal arts and it definitely shouldn't be like that. But I find that a lot of students tend to lean toward pre-law or pre-med or just a pre-health-related track or pre-business and that alone is a very stressful thing to set yourself up for because I feel like when you're dealing with your

> future it's always stressful to think about. I think that since Emory is a very pre-professional college and it's very prestigious and stuff inherently it's going to be very competitive. I feel like because there is so much emphasis on your career after school it's automatically going to be more competitive. –**Natalie**

Adam, a pre-law student, also expressed concern about competition among peers and his future career success. He described that he feels that he must be willing to sacrifice his time at the gym or a full night of sleep, because if he is not willing to sacrifice those things, there is someone else that is willing. He continued by stating that there are a lot of super smart people at Emory, and that fact alone will naturally lead to competition. He believes that the only way to excel in that kind of environment is to outwork everyone else. Most participants felt that since everyone else was stressed, they had to be stressed too.

Eight participants explicitly described that seeing other people being productive, involved in a lot of activities, and/or doing something they are not currently doing makes them feel like they also need to be doing something productive, that they are not doing enough, and/or that they are not doing something right. Some participants described the feeling of not having anything to be stressed about as making them feel like they were forgetting to do something. While talking about how her peers' behaviors affect her own, Nicole described her experiences in the dining hall. She personally never brings homework or study materials to dinner because meals are the one time of day that she can take a break. Although Nicole has made this decision for her health, she always feels like she also needs to be studying while eating because everyone else is. She said that watching other people stress while she is taking a break reminds her that she also has a lot to be doing.

Julia and Anna both had experiences where they were studying for a test all day and decided to go home to sleep, but seeing everyone else around them staying to study for the same test made them stay much later than what they had originally anticipated. Anna stated that the reason she stayed awake studying was because her peers were talking about a concept that she had not studied yet. As a result, she remembered doing worse on the exam and said that she would have been much better off going home. Julia described a similar instance. In her case, she had been studying for the exam days before everyone else and felt prepared, but she did not go home to bed because she was worried about falling behind.

For Abby and Alison, this feeling of not doing enough manifested in the form of involvement on campus. They notice that others pride themselves on how much they have going on and how involved they are, consequently making even the most active people on campus feel like they should be doing more instead of thinking that it is a good thing to have time for sleep, proper nutrition, and taking time for oneself. Alison particularly resonated with this idea, stating:

> This fall I quit my lab and last semester was very unhealthy for me, and I was not in the best place mentally. But when I quit my lab I started searching for other things to do to take its place because I was like “oh I’m not busy enough.” I’m taking a good amount of classes, I’m applying to programs, I’m the president of my sorority, I’m in multiple clubs, like I’m doing a good amount of things, and yet I was searching for something else to add because I didn't feel that when looking at my peers that I was high enough in the busy-sense. I don't think it promotes necessarily doing what you love because you love it. I just don't think it necessarily promotes doing things in a healthy manner. –**Alison**

Related to the finding that students feel like they need to be doing more, eight participants directly mention a competition for stress. Even more describe cultural traits of “busy bragging,” students using their stress as a status symbol, and/or using their stress as

validation that they are doing something right. Participants observe that their peers often brag about who is the busiest and find ways to talk about how busy they are. Alison said that "What do you have this week?" is often the first thing people ask each other. Participants described normal encounters with peers as such:

> **Student 1**: How many hours of sleep did you get last night?
> **Student 2**: Oh, I had so much going on, I only slept four hours.
> **Student 1**: You got four hours? I only got three.

Jane expressed that everything in the Emory environment is based on stress and said that being busy is thought to be cool. Natalie and Dom talked about people bragging about how well they did on an exam after not sleeping for an entire night or after getting drunk the night before. Dom called it a "pride" for people if they do well irrespective of sleeping little or having a lot of things going on. There is an idea among participants that time spent on something equals success, even if that time spent was not particularly productive. Natalie thinks that this pride stems from people wanting to display their capabilities. Her perception is that students brag about their ability to do well on something because they overcame a disadvantage (i.e. sleep deprivation, inebriation, other obligations, etc.).

A large number of participants (18/30) described finding balance between a social life and school as stressful. Additionally, participants used social life and school work load as being reasons for not engaging in some health behaviors. Participants often referred to this as a "work hard, play hard" environment:

> I think it's become part of our Emory culture. or maybe it's a college culture where it is work hard play hard. But you could work hard and play medium or something. And like, if someone is like 'I'm going out because I've finished my exam' they encourage them. Like 'Yeah! you should You deserve it!' It's not like 'no no it's bad!' –**Anna**

> I think that at Emory there is a certain environment or culture of study hard. And yes, there is a little bit of play hard, but it's not study hard, live well, play hard. It's more just like study hard, play hard. It's like two extremes. –**Nick**

Almost all participants said that they are likely to stay up later to hang out with friends or do social things. Will conceded that the party culture on campus is what hinders him from having a consistent sleep schedule. For Nathan, partying with friends the weekend after taking an exam stops him from catching up on the sleep he lost while pulling all-nighters to study.

Without being prompted, eight participants referenced an observation of the use of drugs and alcohol to cope with stress or to study. Specifically, Adderall was mentioned four times by participants who had either observed their peers' use of it or used it themselves, alluding to some students' reliance on study-enhancing drugs. Dom thought that people took it to get an edge in terms of competition with their peers. Mike displayed that Dom's theory has some merit:

> I remember I was leaving for a game at like 9am on a Saturday morning and like six kids were going to the library. I was like 'what are you guys doing?' and they're like 'Oh, we're going to the library, we all just took Adderall like we are going to the library.' And I was like 'what! I'm never going to get the same grades as you guys because I would never do that in my entire life!' –**Mike**

For Ollie, taking Adderall is one component of performing an all-nighter correctly:

> The last time I pulled an all-nighter, I had those three exams in a week. I had gotten out of an exam at 6pm and I had one the next day at 11. So, I studied the whole night and probably slept like an hour and I had a triple espresso at 11 or 12 that night. Then I had another one at 4 or 5 am, and then I slept for an hour, woke up, took an Addy, and then went to my exam. –**Ollie**

Most participants (18/30) have pulled at least one all-nighter in college to study for an exam or to write a paper. Five participants pull all-nighters regularly. The occurrences typically

happened when a participant had either multiple tests in a short period of time or had procrastinated studying so much that an all-nighter was necessary to know enough material for the test. Mike, Nathan, and Jack pull all-nighters for the latter reason. In fact, all-nighters are their method of choice for studying. Because they would rather be social and do things other than study, they find the all-nighter worth the stress.

Six participants referenced an awareness of how far they can push themselves into unhealthy behaviors while still being able to "function," mainly referring to how much sleep they can give up before it becomes detrimental. Other participants talk about functioning without meals, and Katherine described taking time for herself as "extra fluff" that she can function without.

Participants also alluded to a feeling that their work is never done. They find themselves constantly thinking about what they must do next and moving from one thing to another without having time to break. Even when they finish an assignment or get out of an exam, they feel like their stress continues because even though that one thing is done, there is so much more that follows. While comparing her abroad experience studying in Spain to Emory, Emma stated:

> The fact that that is a mentality we have that we are never done doing work and never actually take a break when it's not vacation or something. I think it is a very unhealthy attitude to have because that will lead a lot of people to do exactly what I was just saying, like not prioritize other things because they feel like their work is more important and it's never finished. –**Emma**

Overall, participants are tired most days of the week and often rely on stimulants like caffeine to keep them going. Typically, upperclassmen expressed more daily tiredness than did underclassmen which they thought to be due to increased workload. Some participants

expressed that they are tired every day of the week. Coffee and soda were the main stimulants used by participants to stay awake and alert, but coffee was used by most. Adam and Nathan were two respondents who said that they do not experience tiredness or fatigue regularly, but these two men also noted that they drink upwards of seven cups of coffee per day.

Besides the number of hours of sleep decreasing, participants described that their eating behaviors were most commonly affected by stress. While almost all participants said that their eating patterns change in some way, there were different nuances. Some participants, like Nick, Jack, and Alison, skip meals altogether. Others, like Daphne, Abby, and Jason, eat significantly more food when they are stressed. These participants generally tend to snack more and grab saltier, fattier foods that they can grab on the go. Still others, like Natalie and Susanne, eat the same types of foods as normal but eat bigger quantities of them. A lot of participants practiced a mixture of these behaviors. For example, Andrew explained:

> When I'm stressed I don't eat as many structured meals, I snack more. So, I always eat a lunch. But with dinner… sometimes I do skip dinner and I make up for it by snacking. Like coming down here and getting a bunch of snacks. A lot of sugar, a lot of stuff just to keep me up. When I'm stressed, it's usually like chips and stuff like that, but when I'm not stressed, it's usually granola bars and stuff. –**Andrew**

V. Discussion

This study explores health behaviors of undergraduates through the lens of health majors and non-health majors' health behaviors. Previous research shows a positive correlation between enrollment in health education courses and subsequent health behaviors (Lee, Jin, & Kim, 2013; Fu & Jien, 2007; Hekler, Gardner, & Robinson, 2010; Singh et al., 2015; Brown et al., 2011; Ha & Caine-Bish, 2009; Babinski et al., 2018). My study aim was to look deeper into how individuals who are exposed to health education (having a health major) understand and

practice health behaviors in comparison to those who do not have as much exposure to health education. I did not find a relationship. This may be due to the fact that being a health major is not the same thing as a targeted health education intervention about a particular health behavior, but a much broader frame of knowledge.

Past studies identified various barriers and facilitators to health behaviors. Barriers and facilitators were essentially categorized into three levels: individual, interpersonal, and structural/environmental (Greaney et al., 2009; Townsend et al., 2015). The present study found participant barriers and facilitators to be similar to existing research in that participants expressed barriers and facilitators within those three levels. Individual barriers included priorities, habits, procrastination, and stress. Overall stress was the biggest barrier to health behaviors among both groups, which provides support for research dealing with negative outcomes resulting from stress (Beiter et al., 2014; Valerio, Kim, & Sexton-Radek, 2015; Ng & Jeffrey, 2003) and may be an integral component in studying health behaviors of undergraduates. Individual facilitators for health behaviors were described as participants knowing more about themselves and what strategies work for them. Additionally, an individual facilitator identified as positive stress also enabled health behaviors in participants of the present study. A slight nuance between groups regarding individual level facilitators was that non-health majors were the only participants to mention strong resistance to certain behaviors. Further research with a random sample is needed to explore this finding.

Interpersonal barriers and facilitators for participants were influences from peers and family, which is similar to prior research (Pelletier, Graham, & Laska, 2014; Gòmez-Lòpez, Granero Gallegos, & Baena Extremera, 2010; Skinner & Veilleux, 2016; Simons-Morton et al.,

2015; Varvil-Weld et al., 2014; Smith, Petosa, & Shoben, 2018; Jerome, Baker, & Fang, 2018). There were some differences between groups. For health majors, family influence was often experienced in the form of parental expectations and pressures, while for non-health participants, family barriers stemmed mainly from poor parental health behaviors and lack of encouragement for health behaviors from parents. When looking at peer barriers, health majors felt them in the form of competition, while non-health majors faced more peer pressure to engage in unhealthy behaviors. Future studies should include a larger sample size and more specific prompts to flesh out these findings. Family influence for health behaviors was more frequent in health majors, but similar to past studies, both groups agreed that their parents were responsible for instilling health behaviors in them early on (Varvil-Weld et al., 2014; Simons-Morton et al., 2015). Likewise, positive peer facilitators also affected participants' engagement in health behaviors (Smith, Petosa, & Shoben, 2018; Jerome, Baker, & Fang, 2018).

Consistent with past studies are the barriers and facilitators at the structural or environmental level. Participants experienced barriers such as time constraints and lack of convenience or availability of resources. Time was one of the biggest barriers for participants to do things like exercise, sleep a sufficient amount, cook healthy foods, take time for oneself, and the like, which has been a major finding in previous research as well (Townsend et al., 2015; Musaiger et al., 2014; Greaney et al., 2009; El-Bagoury, Hassan, & Abouseif, 2017; Smart et al., 2015; Gòmez-Lòpez,Granero Gallegos, & Baena Extremera, 2010). The only facilitator mentioned by participants at the structural/environmental level was what they learned in school, but as previously mentioned, education from college classes may not be an effective facilitator for health behaviors. Something not mentioned in prior research that could be

explored in future studies is the personal knowledge that participants gained from dealing with the harsh and demanding conditions of college life, such as the extent of an individual's internal drive and their perception of happiness. Participants in the current study mentioned that being at college allowed them to learn about their health and wellness in a new way because of the pressures put on them.

Supporting Wheaton and Montazer's (2016) Two-Way Classification of Stress, participants experienced a wide array of stressors, including daily hassles, nonevents, traumas, and contextual stressors, every day on the micro, meso, and macro levels. Participants expressed being stressed as a result of multiple things at once which only amplified the effects of other stressors. Stress often stemmed from peer situations and time constraints for participants, showing a relation between barriers that could amplify stress levels even more. Participants mentioned a large competitive aspect adding to their stress, which could be studied further to add to Twenge's (2000) age of anxiety hypothesis. Finding a balance between social life, school, and other obligations was also a struggle for participants, consistent with the interrole conflict theory by Giancola, Grawitch, and Borchert (2009). More research needs to be done on the phenomenon of "busy bragging" reported by participants to be a negative influence on their ability to practice health behaviors consistently. Participants felt that they needed to be doing something productive all the time so as not to get behind and/or to feel like they were on the same level as their peers who also seem to be constantly busy. Competition among students whether in class, job prospects, or involvement in the most activities could be contributing to rising anxiety levels in college students without them being aware of it.

Feeling like their work is never done also greatly contributed to overall stress of participants. As a result, they mentioned a growing concern about the use of drugs and alcohol contributing to a “work hard, play hard” mentality. More research should explore the relationship between academic excellence, high-achievement, and use of substances, specifically regarding how students talk about the lengths they go to for success and the effects of perceived pressure to do well in their endeavors.

There are some limitations to this study. It is important to remember that this study sample is not representative of the Emory University population, as participants were all affiliated with a Greek organization and recruited through convenience sampling. Moreover, results have limited generalizability to other schools due to Emory University being an elite institution. Each school environment will have different aspects to their student culture and students at other institutions may not experience the same things as Emory University undergraduates.

The qualitative and inductive nature of the present study was effective in not only supporting previous research on health behaviors of undergraduates, but also allowed for participants to freely talk about what they thought to be important and provide considerations for future research. I recommend that additional research dive deeper into the relationship between broad health knowledge of college students and their subsequent health behaviors, as well as how to mitigate stress among students, especially at elite institutions.

VI. References

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VII. Appendices

Appendix A: Sample Attributes

	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
	PARTICIPANT PSEUDONYM	SEX	AGE	HOME STATE	RACE/ETHNICITY	NATIONALITY	SEXUAL ORIENTATION	YEAR	HEALTH MAJOR	GREEK ORG.	STATUS	FATHER OCCUPATION	FATHER EDUCATION	MOTHER OCCUPATION	MOTHER EDUCATION
	ALEXA	F	21	OHIO	WHITE	AMERICAN	HETEROSEXUAL	4	Y	PI BETA PHI	INACTIVE	WELDER	HIGH SCHOOL	SALESPERSON	GED
	BAILEY	F	20	CONNECTICUT	WHITE	AMERICAN	HETEROSEXUAL	3	Y	ALPHA DELTA PI	ACTIVE	CONSULTANT	MBA	ENTREPRENEUR	BA
	KATHERINE	F	21	NORTH CAROLINA	WHITE	AMERICAN	HETEROSEXUAL	3	Y	ALPHA DELTA PI	ACTIVE	DOCTOR	MD	DOCTOR	MD
	JANE	F	20	MISSOURI	WHITE	AMERICAN	HETEROSEXUAL	2	N	ALPHA DELTA PI	ACTIVE	DOCTOR	MD	STAY-AT-HOME	HIGH SCHOOL
	ABBY	F	21	MISSOURI	ASIAN INDIAN	AMERICAN	HETEROSEXUAL	4	Y	KAPPA KAPPA GAMMA	ACTIVE	PROFESSOR	PHD	ENGINEER	BA
	SARAH	F	19	MASSACHUSETTS	ASIAN	AMERICAN	HETEROSEXUAL	2	N	GAMMA PHI BETA	ACTIVE	ENGINEER	MA	DENTIST	DDS
	JULIA	F	20	ILLINOIS	WHITE	AMERICAN	HETEROSEXUAL	2	Y	ALPHA DELTA PI	ACTIVE	ACCOUNTANT	BA	OFFICE WORKER	BA
	EMMA	F	21	CONNECTICUT	WHITE	AMERICAN	HETEROSEXUAL	4	N	KAPPA ALPHA THETA	ACTIVE	INSURANCE EXECUTIVE	BA	DOCTOR	MD
	SUSANNE	F	21	FLORIDA	ASIAN INDIAN	AMERICAN	HETEROSEXUAL	4	Y	KAPPA ALPHA THETA	INACTIVE	DOCTOR	MD	HEALTH ADMINISTRATOR	MA
	ALISON	F	21	NORTH CAROLINA	WHITE	AMERICAN	HETEROSEXUAL	4	Y	KAPPA KAPPA GAMMA	ACTIVE	DOCTOR	MD	DOCTOR	MD
	DAPHNE	F	21	NEW JERSEY	WHITE	AMERICAN	HETEROSEXUAL	4	N	PI BETA PHI	ACTIVE	BANK TRADER	MBA	ACCOUNTANT	BA
	MADDY	F	21	MICHIGAN	WHITE	AMERICAN	HETEROSEXUAL	4	N	SIGMA DELTA TAU	ACTIVE	INSURANCE EXECUTIVE	JD	STAY-AT-HOME	MA
	ANNA	F	20	NEW JERSEY	ASIAN	AMERICAN	HETEROSEXUAL	3	Y	PI BETA PHI	ACTIVE	ENTREPRENEUR	BA	STAY-AT-HOME	BA
	NATALIE	F	21	NEW YORK	WHITE	AMERICAN	HETEROSEXUAL	4	Y	DELTA DELTA DELTA	INACTIVE	DOCTOR	MD	COLLEGE COUNSELOR	JD
	NICOLE	F	19	CALIFORNIA	WHITE	AMERICAN	HETEROSEXUAL	2	Y	ALPHA DELTA PI	ACTIVE	CEO	JD	NURSE	BA
	JACK	M	21	WISCONSIN	BIRACIAL	AMERICAN	HETEROSEXUAL	4	N	SIGMA PHI EPSILON	ACTIVE	MILITARY	BA	STAY-AT-HOME	BA
	ADAM	M	21	OHIO	ASIAN INDIAN	AMERICAN	HETEROSEXUAL	4	Y	PI KAPPA ALPHA	INACTIVE	LAWYER	JD	STAY-AT-HOME	MA
	OLLIE	M	20	FLORIDA	LATINO	CUBAN	HETEROSEXUAL	3	Y	KAPPA SIGMA	ACTIVE	ENGINEER	BA	NURSING ASSISTANT	HIGH SCHOOL
	JOHN	M	24	KOREA	ASIAN	KOREAN	HETEROSEXUAL	4	N	ALPHA TAO OMEGA	ACTIVE	KOREAN AMBASSADOR	MA	STAY-AT-HOME	BA
	JASON	M	20	NEW JERSEY	WHITE	AMERICAN	HOMOSEXUAL	3	Y	SIGMA PHI EPSILON	ACTIVE	ENGINEER	BS	DOCTOR	MD
	NICK	M	20	GEORGIA	WHITE	AMERICAN	HETEROSEXUAL	2	Y	SIGMA ALPHA EPSILON	ACTIVE	COLLEGE ADMINISTRATOR	PHD	STAY-AT-HOME	MA
	MIKE	M	23	FLORIDA	WHITE	AMERICAN	HETEROSEXUAL	4	N	SIGMA ALPHA EPSILON	INACTIVE	COLLEGE ADMINISTRATOR	PHD	STAY-AT-HOME	MA
	BRANDON	M	21	NEW YORK	WHITE	AMERICAN	HOMOSEXUAL	4	N	ALPHA TAO OMEGA	ACTIVE	BRANCH MANAGER	BA	SOCIAL WORKER	BA
	ANDREW	M	21	NEW JERSEY	WHITE	AMERICAN	HETEROSEXUAL	4	N	SIGMA ALPHA MU	ACTIVE	LAWYER	JD/LLM	STAY-AT-HOME	MBA
	NATHAN	M	21	NEW JERSEY	WHITE	AMERICAN	HETEROSEXUAL	4	N	SIGMA CHI	ACTIVE	SALES EXECUTIVE	BBA	STAY-AT-HOME	BA
	WILL	M	21	NEW JERSEY	WHITE	AMERICAN	HETEROSEXUAL	4	N	ALPHA TAO OMEGA	ACTIVE	BANK TRADER	MA	TEACHER	MA
	MARK	M	20	ILLINOIS	WHITE	AMERICAN	HETEROSEXUAL	3	N	ALPHA TAO OMEGA	ACTIVE	FIREFIGHTER	HIGH SCHOOL	TEACHER	BA
	DOM	M	21	GEORGIA	WHITE	AMERICAN	HETEROSEXUAL	4	Y	KAPPA ALPHA	INACTIVE	CONSULTANT	MBA	STAY-AT-HOME	BA
	JIM	M	21	CONNECTICUT	WHITE	AMERICAN	HOMOSEXUAL	4	N	ALPHA TAO OMEGA	ACTIVE	LAWYER	JD	NURSE	MA
	JOE	M	21	MONTANA	WHITE	AMERICAN	HETEROSEXUAL	4	N	SIGMA ALPHA EPSILON	ACTIVE	ENVIRONMENTAL SCIENTIST	MA	STAY-AT-HOME	BA

Appendix B: Informed Consent Form

Emory University
Consent to be a Research Subject

Title: *Undergraduate Honors Thesis: Exploring Health Behaviors of Undergraduates*
Principal Investigator: Tracy L. Scott, Ph.D.
Co-Investigator: Marissa Pham

Introduction
You are being asked to be in a research study. This form is designed to tell you everything you need to think about before you decide to consent (agree) to be in the study or not to be in the study. **It is entirely your choice. If you decide to take part, you can change your mind later and withdraw from the research study. You can choose to skip any questions you do not want to answer.**

You were chosen to participate in this study because you are an undergraduate between the ages of 18 and 22 at Emory University in Atlanta, GA. Participation in this study will last between 45 minutes and 1 hour. The study is being conducted as part of my Senior Honors Thesis under the direction of Dr. Tracy L. Scott.

Before making your decision:

- Please carefully read this form or have it read to you
- Please ask questions about anything that is not clear

You can take a copy of this consent form, to keep. Feel free to take your time thinking about whether you would like to participate. By signing this form, you will not give up any legal rights.

Study Overview
The purpose of this study is to explore health behaviors of undergraduate students.

Procedures
You will be participating in an in-depth interview in which you will be asked about your health behaviors. The interview will last between 45 minutes and 1 hour. With your permission, the interview will be taped using an audio recorder. The recording will not be shared with anyone other than the Principal (Tracy L. Scott) and Co-Investigator (Marissa Pham) of this study. The Co-Investigator will transcribe the interview, and immediately after transcribing, the audio recording will be destroyed. The Co-Investigator will be conducting the interview. The interview will take place at a location on campus that is easy for you.

Risks and Discomforts
The only foreseeable risk is a breach of confidentiality. However, researchers will protect all personally identifiable information with password protected documents and computers (see

Confidentiality section below). There are no other foreseeable risks or discomforts associated with this research study.

Benefits

This study is not designed to benefit you directly. This study is designed to learn more about undergraduate students' health behaviors. The study results may be used to help others in the future.

Compensation

You will not be offered payment for being in this study.

Confidentiality

Certain offices and people other than the researchers may look at study records. Government agencies and Emory employees overseeing proper study conduct may look at your study records. These offices include [the Office for Human Research Protections, the funder(s), the Emory Institutional Review Board, the Emory Office of Research Compliance]. Emory will keep any research records we create private to the extent we are required to do so by law. A study number rather than your name will be used on study records wherever possible. Your name and other facts that might point to you will not appear when we present this study or publish its results. All identifying information will be destroyed. Only the Principal Investigator and Co-Investigator will have access to participants' identities during data collection and interview transcription. Interview recordings will be stored in a locked cabinet in the Principal Investigator's office, downloaded only to password-protected computers belonging to the Principal Investigator or Co-Investigator, and then destroyed upon transcription.

Voluntary Participation and Withdrawal from the Study

You have the right to leave a study at any time without penalty. You may refuse to answer any questions that you do not wish to answer. This decision will not affect your class standing, course grades, graduation status, or standing with any faculty or staff at Emory.

Contact Information

Contact Marissa Pham at marissa.pham@emory.edu or (507) 360-4663, or Dr. Tracy Scott at tscott@emory.edu or (404) 727-7515 if you have any questions about this study or your part in it or if you have questions, concerns or complaints about the research.

Contact the Emory Institutional Review Board at 404-712-0720 or 877-503-9797 or irb@emory.edu:

- if you have questions about your rights as a research participant.
- if you have questions, concerns or complaints about the research.
- You may also let the IRB know about your experience as a research participant through our Research Participant Survey at http://www.surveymonkey.com/s/6ZDMW75.

Appendix C: Interview Guide

Introduction

I want to talk to you today about different parts of your daily life at college, as well as how it compares to your daily life growing up and in high school. I would like you to talk in as much detail as you can and give me examples when you can.

Let's start with life in college. I'm going to ask you about different areas of daily life that many people talk about as "healthy habits." There are no right or wrong answers here. I want to know about what you think and what you actually do.

General Thoughts and Patterns

1. Before we get started, could you please state your gender, race or ethnicity, age, year in school, major, and any intended pre-professional track?
2. In your own experience, what are the things that you think are most important for you to be healthy? [Probe: for example, physical activity, healthy eating, sleep, meditation, etc.]
3. Why do you think these things are important?
4. Do you try to do these things?
    a. How? Please tell me in as much detail as you can.
    b. For example, tell me about a typical day or week in your life now at college from when you wake up to when you go to bed, i.e. when you sleep, what you eat and who with, when you exercise, etc.
5. Among nutrition, physical activity, sleep, and time for yourself, how would you rank these health behaviors in order of most important to least important to you (the things you would least likely to give up to most likely)?

Now I'm going to ask more specifically about certain areas of daily life. [If they have already given these details, skip questions or shorten sections below.]

Physical Activity

1. Tell me about how physically active you are on a typical day (i.e. exercise, mode of transportation and distance, study breaks, etc.).
    a. Or does it vary by the day of the week?
    b. What does a typical day look like.
2. E.g., does your day involve a lot of sitting? Walking?
    a. Do you count your steps? If so, how many do you usually get?
    b. On average, how many hours a day would you say you sit? How does this vary from the weekends?
3. Do you do any specific exercise or other things to stay active? What and how often?
    a. If female, do you feel intimidation at the gym or working out in front of other people? How does that affect your willingness to work out?
4. Do you play any sports? What and how often?

5. How does your physical activity in college compare to that in high school? Can you give me examples?

Meals and eating

1. Tell me about what you usually eat for breakfast, lunch, dinner, and snacks. E.g. what you eat, how much, where you eat, who you eat with, etc.
    a. How many times per week do you eat out, and what kinds of food do you eat when out?
2. Do you find that your eating patterns fluctuate between weekdays and weekends?
    a. If yes, how so? How do your eating patterns change during times of stress (i.e. midterms and finals)?
3. Do you drink caffeine? What kinds?
4. What nutritional supplements do you take, if any?
5. Tell me about your water intake.
    a. Do you think you consume enough water throughout the day?
    b. How does your water intake change depending on what's going on in your life?

Sleep

1. Tell me about your sleep patterns.
    a. Do you have a sleep schedule that you follow?
    b. How much sleep do you usually get per night?
    c. How does your sleep differ on weekdays vs. weekends or during stressful times?
    d. Do you feel like times you go to bed make a difference in feeling well-rested?
2. How often do you feel tired, fatigued, or groggy during a given day?
    a. Do you have any 'pick-me-up' strategies for these times?
    b. If caffeine, do you have a caffeine schedule?
    c. When do you feel the least tired or groggy?
3. How likely are you to pull an all-nighter before an exam?
    a. How has the number of all-nighters changed from year to year in college?
    b. Do you think the all-nighters were necessary? What steps do you think you could have taken to avoid these?
    c. Were these all-nighters beneficial? How did they come to your detriment?
    d. What do you think changed from your first year to now regarding prevalence of all-nighters?
4. How often do you find yourself sacrificing sleep to do other things instead?
    a. What are things you willingly choose to do over sleeping?

Mental Health

1. How often do you feel (overwhelmed) stressed in a day? in a week?
2. How do you relieve stress?
3. Do you engage in any kind of meditation, whether structured or simply alone time?
4. What do you do in your alone time, and how often do you have it?
    a. Do you find that you aren't getting enough time to yourself?
    b. How does it affect you?

Life before college

Now, I want to turn to your life before college.

1. First, what do your parents do for a living and what is their education background?
2. Tell me more about daily life growing up and what your parents encouraged about health behaviors.
    a. How are your previously stated health behaviors different from the ones you had in high school?
    b. If there was a shift for the better, when did you start thinking about better health behaviors? What influenced it?
    c. What do you think played a part and affected your health habits upbringing?
3. Did they have you play sports? Exercise? Did they do any of these activities themselves?
    a. Did they ever talk about health and what you should do to be healthy?
4. How did your experiences growing up, and with your parents, compare to what you experience and think now, in college, about healthy habits?
    a. Why do you think that is?
5. How do you see yourself using your values and ideas about health behaviors in the future if you decided to have kids or with a future partner?
6. If health change occurred, how do you think the changes in society or your education have led toward your health vision?
    a. Where are these ideas coming from?

Change and Final Thoughts

1. Are there things you would like to change about your daily habits? What and in what ways?
2. What things make it easy or difficult to change/do these things?
    a. What things could Emory change to help facilitate healthy change?
3. Do you think that higher education promotes a healthy lifestyle, (thinking of your Emory experience)? Why or why not?
    a. What do you notice about health behaviors of others in Emory's culture?
    b. How does that effect your choices or perceptions about yourself?
    c. What do you notice about your own behaviors within the "culture of stress"?
4. What is your tentative plan for after college?
    a. How do you see your future career path influencing your health behaviors?
5. How do you think your education, (major, program, etc.) has influenced your health decisions and behaviors?
    a. If you hadn't chosen your particular major, how do you think your health might be different?
6. Finally, is there anything else about health and your daily life that you think is important (that I haven't asked)? Or anything else we talked about that you would like to go back to or clarify?

If I need to follow up with you for clarification or something that was missed in this interview, would it be okay to contact you in the future? Thank you so much for your time.