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The Correlation Between Personal Stressors, Anxiety and Caffeine Consumption among JMU

Faculty

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An Honors College Project Presented to  
the Faculty of the Undergraduate  
College of Health and Behavioral Studies  
James Madison University

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by Erica Beth LaRocca

April 2020

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Accepted by the faculty of the Department of Health Sciences, James Madison University, in partial fulfillment of the requirements for the Honors College.

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## **Dedication**

I would like to dedicate this project to my mother, Beth and father, Anthony. This project represents years of hard work and growth. My parents have been there to support and cheer me on every step of the way. They have been there for many stressed out Facetime calls and have consistently been my biggest supporters and inspirations for how to work hard at work worth doing.

I would also like to dedicate this project to Dianne Fulk. Dianne has been one of my main supporters at James Madison University and has helped me navigate the Honors College process. She is an incredible and integral part of the Honors College and deserves recognition for all she does for the many students she loves.

## **Acknowledgements**

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I would also like to thank my reader, Dr. Tracey Thomas, for supporting me during this process. She been a wonderful sounding board and a wealth of information and guidance from the moment I first stepped into her classroom. This project would not be where it is without her.

Lastly, I would like to thank Dr. Audrey Burnett for jumping into this project with such energy and positivity, despite coming on board late into the process. She has provided valuable feedback and passion that I am eternally grateful for.

## **Abstract**

This study investigates the relationships between caffeine consumption, stress and anxiety among faculty at James Madison University. This was examined using a mixed methods study with a sample of twenty undergraduate faculty members from all Academic Colleges besides the College of Education. Quantitative data serves to provide descriptive statistics as well as data from the Generalized Anxiety Disorder-7 scale and the Caffeine Expectancy Scale. Qualitative data serves to learn about the motivations and habits surrounding caffeine, and about the stressors and anxieties specific to faculty members. Anxiety and caffeine are reported to have an association ( $p=0.656$ ). It was found that participants use exercise as a primary source of stress and anxiety management. Faculty consume large quantities of caffeine for reasons such as habit, comfort, social interaction, enhanced productivity and to wake up. Participants report that they view the caffeine habits of students as problematic but do not find their habits, nor the habits of their colleagues, to be problematic.

## **Chapter 1: Introduction**

Caffeine has been used and consumed by humans in its natural form dating back to the Paleolithic period. Over 60 plant species around the world contain caffeine (Barone & Roberts, 1984). Some South American drinks that have been created from caffeine plants date back to the earliest records of that area (Barone & Roberts, 1984).

Anxiety has only been considered a psychological illness in recent years. It was not until the twentieth century that it was formally considered a psychiatric condition (Croc, 2015). However, anxiety was considered a disorder as early as 106 BC, as evident from the writings of Cicero in the Greco-Romano period. It is important to note that these writings distinguished anxiety from sadness (Crocq, 2015). The modern- day definition of anxiety is, “the response to a future or possible threat” (Peterson, M.J., 2018). It is related to fear but different in that fear is a response to a “real or perceived immediate threat” ” (Peterson, 2018). One disorder associated with anxiety is Generalized Anxiety Disorder which is characterized by “persistent, excessive and unrealistic worry about everyday things” (Anxiety and Depression Association of America, 2018a).

The term stress was first used outside the field of physics by Hans Selye, a medical doctor, in the 1920's. Selye proposed that stress was “a non- specific strain on the body caused by irregularities in normal body functions” (Centre for Study on Human Stress, 2019). The contemporary definition of stress in the medical context is “a physical, mental, or emotional factor that causes bodily or mental tension” (Shiel, 2018).

An increase of stress levels has been shown to increase levels of anxiety in some people (Fricchione, 2004). While some substances have been linked to anxiety, caffeine has not been well studied with its relationship to anxiety. One study found that those with a diagnosis of

Generalized Anxiety Disorder are more susceptible to the effects of caffeine (Bruce, 1992).

However, it has not been studied if caffeine use or abuse can lead to a diagnosis of Generalized Anxiety Disorder. Therefore, the purpose of this study is to add to the research surrounding caffeine use and its relationship to anxiety and stress. The current study aims to see if there is a relationship among anxiety levels, stress levels and caffeine consumption. This study aims to find a positive correlation between the amount of caffeine consumed and levels of anxiety and stressed experienced by participants. More specifically, the research questions that are investigated in this study are as follows:

1. What are faculty's motivations for consuming caffeine?
2. Is there a perceived relationship between amount of caffeine consumed and levels of anxiety?
3. How would JMU faculty members describe their stress and anxiety?
4. How do JMU faculty members perceive caffeine use on campus?



## **Chapter 2: Review of Literature**

### Caffeine

Caffeine is a stimulant of the central nervous system and diuretic found commonly in coffee and tea (Biology Online, 2020) According to Barone and Roberts, caffeine is the most widely consumed central nervous system stimulant. Barone and Roberts state that caffeine is found in many over-the-counter medications and used to treat infant apnea, migraines, and as a bronchial and cardiac stimulant. The biological and physiological response to caffeine is determined not only by the consumption of the substance but on the concentration of it in the body (Barone & Roberts, 1984). Caffeine is considered a psychoactive drug. However, it is legal, often not regulated, and often inexpensive (Sajadi-Ernazarova, Anderson, & Hamilton, 2019). Coffee contains the highest and most variable levels of caffeine among commonly consumed dietary items (Barone & Roberts, 1984), Coffee, tea and soft drinks are major sources of caffeine in the United States, with energy drinks also gaining in popularity (Sajadi-Ernazarova, Anderson, & Hamilton, 2019). The mean daily intake of caffeine in the United States is 280 mg; the acceptable safe limit is no more than 400 mg per day (Sajadi-Ernazarova, Anderson, & Hamilton, 2019).

One study found that there is a correlation between caffeine and anxiety and sleep but does not specify if caffeine creates anxiety or exacerbates pre-existing levels of anxiety (Neglig, Daval & Debry, 1992). However, it is reported that higher doses of caffeine are more likely to produce symptoms of anxiety (Sajadi-Ernazarova, Anderson, Hamilton, 2019). Researchers found that the central nervous system does not develop a large tolerance for caffeine but found that there was a level of dependency and withdrawal symptoms reported among those that consume caffeine (Neglig, Daval & Debry, 1992). Many studies have proved that caffeine

withdrawal syndrome is a clinical diagnosis and thus, it is included in the Diagnostic and Statistical Manual of Mental Disorders, abbreviated DSM-5 (Sajadi-Ernazarova, Anderson, Hamilton, 2019).

Information regarding caffeine use and college students is readily available. One study surveyed college students and found that 89% had consumed caffeine in the past 30 days (Norton, Lavez & Sullivan, 2011). Another study examined the association between caffeine consumption and sleep. This study found an inverse relationship between the amount of caffeine consumed and duration of sleep. (Hicks, Hicks, Reyes & Cheers, 1983). Additionally, a study by McIlvain, Noland, & Bickel found that 51% of students surveyed reported having symptoms of caffeine withdrawal and that 83% reported at least one symptom of caffeine intoxication (2013). However, similar studies relating to faculty and caffeine consumption is exceptionally rare. This study seeks to fill an important gap in the literature by expanding our understanding of the consumption habits of faculty members in an undergraduate university setting. It is important to understand this gap because of the widespread caffeine addiction found among higher education and the increased access to caffeine on college campuses.

### Anxiety

Generalized Anxiety Disorder, abbreviated as GAD, is defined as, “persistent and excessive worry about several different things” (Anxiety and Depression Association of America, 2018b). Generalized Anxiety Disorder is diagnosed after six months of having symptoms (Anxiety and Depression Association of America, 2018b). Fricchione says that anxiety disorders are the most prevalent psychiatric condition in the United States, except for substance abuse disorders (2004). There is a difference in what children and adults with GAD

typically experience anxiety about. For adults job security and performance is a major source of anxiety, as well family and other responsibilities (National Institute of Mental Health, 2016).

The Anxiety and Depression Association of America says that diagnostic tools and criteria for GAD are defined in the *DSM-5* (2018c). They list symptoms that include feeling nervous and irritable, having feelings of danger or panic, and feeling exhausted among others. Those with anxiety can also experience physical symptoms such as tachycardia and tremors (Anxiety and Depression Association of America, 2018c). Symptoms can vary in severity depending on life factors and individual interpretations of stress. Symptoms often worsen when an individual perceives an event or situation as particularly stressful (National Institute of Mental Health, 2016).

Katzman says current treatments for GAD include the use of selective serotonin reuptake inhibitors (SSRI's), followed by the use of serotonin and norepinephrine reuptake inhibitors, (SNRI's), and antipsychotics if symptoms are not subdued with the primary method (Katzman, 2009). John Hopkins Medicine writes that making lifestyle changes such as reducing stress and avoiding stimulating substances can be an effective treatment for GAD (Johns Hopkins Medicine, 2020). Current research is being conducted on ways that stress and the environment affect Generalized Anxiety Disorder (National Institute of Mental Health, 2016).

Following patterns of caffeine, anxiety is well studied among the population of undergraduate students. There is little research about anxiety in a population of faculty members. One study that was found examined poor health outcomes, such as anxiety, in non-tenured track faculty compared to tenure- track. This study found an association between anxiety and job insecurity (Reevy & Deason, 2014). The current study seeks to learn about the anxieties that

faculty members experience and how they manage anxiety in relation to their caffeine consumption.

### Stress

Stress is a physical response to feelings, situations or events that negatively affect your sense of well-being; stressors are those feelings, situations or events. Stressors are perceived differently for each person and thus, the stress response is not felt the same way for each person (Greene, 2017). Internal stressors are thoughts or behaviors that cause feelings of stress. In severe cases, internal stressors can lead to feelings of anxiety. External factors are forces that cannot easily be controlled. Both can lead to the same physical and psychological effects (Greene, 2017).

It is important to note that not all stress is bad. Stress is a biological adaptation that signals the body to initiate the “fight or flight” response. In non- life- threatening situations, it can be a form of motivation (National Institute of Mental Health, 2019). Caffeine is a stimulant that can initiate that “fight or flight response and cause feelings of anxiety” (Iliades, 2018). The National Institute of Mental Health however states that long term, or chronic, stress can be harmful to overall health. Chronic stress can lead to mental disorders like depression or anxiety. They suggest relaxing activities and regular exercise for ways to manage stress (National Institute of Mental Health, 2019). According to Iliades, stress and anxiety are related – stress can cause anxiety and anxiety can make stress worse (Iliades, 2018).

There is a significant lack of literature surrounding stress specific to the role of faculty in higher education. One study found that part-time faculty experience more stress than full time faculty, mainly due to the discrepancies in work responsibilities (Reevy & Deason, 2014). A study by Gmelch, Wilke & Lovrich in 1986 found that the two biggest stressors specific to

faculty are a lack of proper recognition of achievements and a lack of time to accomplish tasks. However, it was noted that end tasks relating to “the central teaching, research or service duties of faculty” were not stressful, but that the process of accomplishing these tasks such as meetings, paperwork and unexpected interruptions contribute to a significant portion of faculty stress. This is an outdated study and as such, present research seeks to update the literature relating to faculty stress (Gmelch, Wilke & Lovrich, 1986).

In a study conducted by Richards and Smith (2015) on secondary school children, it was found that a weekly consumption of more than 1000 mg of caffeine was associated with high stress and anxiety, although it was not conclusive if the high caffeine use caused the high stress and anxiety or if those feelings resulted in higher caffeine use. Another study conducted by Veleber and Templer (1984) administered either 0, 150 or 300 mg of caffeine per 45.36 kg of body weight to participants with an average age of 24.88 years. This study found that there was an increase in anxiety, depression and hostility with the increased administration of caffeine. It did not include stress as a factor (Veleber & Templer, 1984). Another study investigated the effects of caffeine use, specifically energy drinks, on quality of sleep among college students. They found that half of those that were found to use energy drinks on a regular basis has sleep problems, with a significant amount noting anxiety as a reason for the issues (Faris et al., 2016).

There is little research of this nature for adults. Additionally, there is a lack of qualitative research on this topic that seeks to find motivations for consuming caffeine or causes and management of anxiety and stress. This study seeks to fill a gap in the literature and provide information surrounding caffeine use, anxiety and stress among faculty members at an American university.

## **Chapter 3: Methodology**

### **Introduction**

Based on a thorough analysis of the literature, there appears to be links between caffeine use, anxiety disorders and feelings of stress. However, this information is not well studied among adults or those within a particular professional field. This study seeks to add both qualitative and quantitative data to the limited research surrounding these topics.

### **Participants**

This investigation gathered data from 20 undergraduate faculty members at James Madison University. Participants were chosen regardless of biological sex, gender, age or academic college of employment. James Madison University faculty were chosen out of convenience due to the researcher's association with the university. Recruitment occurred by sending a recruitment email to the Dean of all eight undergraduate colleges to be forwarded to their faculty as well as a bulk email to all faculty members at James Madison University using JMU's bulk email system. The bulk email system was utilized due to the lack of response from direct emails to the Deans.

Once faculty members received an email and decided to participate, participants directly emailed the researcher using the email address provided in the recruitment email. From there, the researcher and participant determined a time and private location to meet, either the faculty members' office or a private space within a JMU building of their choice. Subjects were informed that all information would be confidential and they were not subject to any more than minimal risk by participating in the study.

## Procedures

After the completion of a comprehensive literature review, the researcher applied for and received Institutional Review Board (IRB) approval to conduct a mixed methods study. A thorough analysis was conducted using both quantitative and qualitative methods, as discussed below.

The quantitative instrument asked demographic questions such as gender, academic college of employment and number of years employed at JMU. The remainder of the quantitative instrument asked questions related to ideal caffeine consumption behaviors such as time of consumption, average size and quantity consumed as well as negative effects of caffeine in the participants life. Additional questions were asked about responsibilities as a faculty member, stressors and stress management and exercise. Two validated scales were used to assess anxiety levels and caffeine dependency. The Generalized Anxiety Disorder screener (GAD-7) was used in its entirety (Spitzer, Kroenke, Williams, Lowe, 2006). The Caffeine Expectancy Scale was also used in part. Questions from categories regarding withdrawal and dependency, energy and work enhancement, social and mood enhancement and anxiety and negative physical effects were pulled from the larger validated questionnaire. Each category had three questions, which were measured on a six point scale (1=very unlikely; 2=unlikely; 3=a little unlikely; 4=a little likely; 5=likely; 6=very likely) for a total of 18 possible points. A total score was calculated by adding scores for each category, for a total of 72. All questions were coded and entered into the Statistical Package for Social Sciences (SPSS). Descriptive frequencies were run on all questions to assess trends in the data.

For the qualitative portion of the study, an interview was conducted using open ended questions. The interview guide was divided into two categories of questions. The first half of the

interview was focused on caffeine use, including the motivations, patterns associated with the use and perceptions of use specific to academia. The second half of the interview included questions related to managing anxiety and stress and what sources of anxiety and stressors are present in the participants life, both professionally and personally. Interviews lasted between eight and twenty five minutes. All interviews were recorded with written consent from the participant.

All interviews were transcribed by the company Rev. These transcriptions were paid for through an Honors College Mini Grant. All completed transcriptions were uploaded to NVivo, where they were coded and analyzed for reoccurring themes.

### Data Analysis

For the quantitative instrument, descriptive frequencies were run for all questions in SPSS. Then, the validated scales were analyzed. For the Generalized Anxiety Disorder Screener (GAD-7), numeric values are assigned to each column (Not at all=0, Several Days=1, Over half the days=2 and Nearly every day=3). Total scores are calculated by adding scores in each column. Total scores can range from 0-21. Scores that are greater than 5, 10 and 15 represent having mild, moderate and severe anxiety symptoms respectively (Löwe, et al. 2008).

For the Caffeine Expectancy Scale, each subcategory is scored on a 6-point scale (1=very unlikely; 2=unlikely; 3=a little unlikely; 4=a little likely; 5=likely; 6=very likely) (Kearns et al, 2018). The subcategories asked about in this research are withdrawal/dependency, energy/work enhancement, social/mood enhancement and anxiety/negative physical effects. For each sub category, a higher score indicates a higher likelihood of experiencing the respective symptom. For this research, a 12 in each respective sub category is where problems begin. A total score was also calculated. Based on the possible score of 6 points for each question for a total of 12



questions, a total score of 72 is possible. For this research a 48 is where a dependency starts for overall scores (Kearns, et al., 2018)

After calculating the mean sum score for the Generalized Anxiety Scale and the mean sum score overall and for each subcategory on the Caffeine Expectancy Scale, Pearson's correlations were run to test for significance. Pearson's was run between the Generalized Anxiety Scale and each subcategory of the Caffeine Dependency Scale as well as between the GAD-7 and the overall mean sum score.

For the transcribed interviews, coding occurred by thoroughly reading each transcription and finding key concepts in each transcription. Key concepts were then compared across transcriptions to find overarching themes from the data. No set codebook was used. The researcher used an inductive approach to finding themes and reoccurring terms across all interviews. All codes and themes were approved by the faculty advisor for accuracy.

## Chapter 4: Results

Descriptive statistics were used to gather demographic information about participants. Participants included 19 full time faculty members and one part time faculty member. Fifty-five percent (n=11) identified as female, 40% (n=8) identified as male and 1 participant identified as female gender fluid. 65% of participants (n=13) reported having a Ph.D. as their terminal degree with other terminal degrees being Masters of Science and Masters of Art as well as DrPH, Masters of Education, and a Masters of Fine Arts. The average time of employment at JMU is 10.15 years, with a upper value of 33 and a lower value of 0.5 years. The majority of participants (n=6) report being employed by the Honors College, which is due to the researcher's affiliation with the Honors College for this research. All colleges, including the independent program for the Hart School of Hospitality and Sports and Recreation Management, were represented except for the College of Education. Demographic information about participants is presented in Table 1.

**Table 1. Demographic Information of Participants**

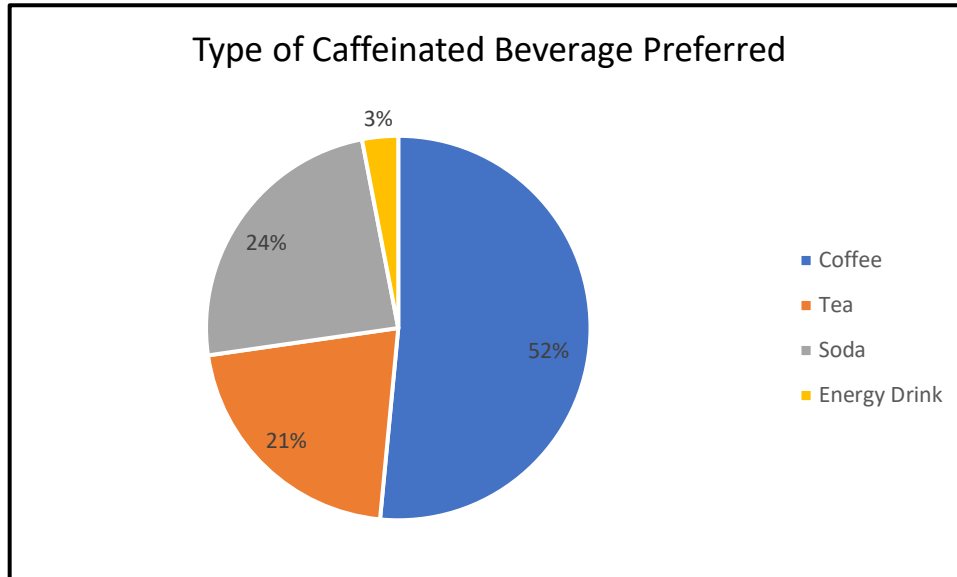
	<b>n</b>	<b>%</b>
<b>Gender</b>		
Male	8	40%
Female	11	55%
Female Gender Fluid	1	5%
<b>Number of Years Employed at JMU</b>		
>1	4	20%
1-10	8	40%
11-20	4	20%
21-30	3	15%
30+	1	5%
<b>Terminal Degree Held</b>		
Ph.D.	13	65%
DrPH	1	5%
Masters (MS, MA, M.Ed., MFA)	6	30%
<b>Employment Status</b>		

Full Time	19	95%
Part Time	1	5%
<b>Job Title *</b>		
Professor	7	35%
Assistant Professor	2	10%
Associate Professor	1	5%
Instructor	1	5%
Lecturer	3	15%
Administrative Role	9	45%

\*Three participants listed an administrative title in addition to a position as a professor and are counted in both the administrative role and professor category

Information regarding caffeine habits, stress and anxiety was gathered in addition to demographic information. All but one (n=19) of the participants report regularly consuming caffeine. The most commonly consumed caffeinated beverage is coffee (n=17), followed by soda (n=8), tea (n=7) and energy drinks (n=1). For the purpose of this study sizes of beverages were quantified as small (less than 12 fl oz), medium (13-16 fl oz), large (17 + fl oz) and an option was given for mixed sizes. Slightly more than half (n=11) report drinking small sized options. Besides beverages, chocolate (n=14) is the most common source of caffeine in participants diets with coffee ice cream being the only other source mentioned. All participants report that when they consume caffeine, they do so in the morning (n=20) with only 25% (n=5) reporting that they also consume in the afternoon. One participant reports consuming caffeine at night as well.

**Figure 1. Type of Caffeinated Beverage Preferred**



Participants reported beginning to consume caffeine at various ages, with 8 years being the youngest and 50 being the oldest. The average of all ages was 20 years old. The amount of caffeine consumed ranges from half a cup to eight cups daily. Many participants (n=8) gave a range for the number of cups consumed with the largest range being 1-5 cups per day. Twenty five percent (n=5) reports consuming only one cup of caffeine per day.

Participants were asked what medical conditions, if any, they had that caffeine affects. Half of the (n=10) reported that they had no medical conditions affected by caffeine. Issues reported included but was not limited to anxiety (n=2), acid reflux (n=2), high blood pressure (n=3) and migraines (n=2). When asked about negative reactions to caffeine, the most common reaction reported is jittery feelings (n=6), followed by heart issues (racing heart, palpitations and irregular heartbeats) ( n=3) and headaches (n=3). Nausea, acid reflux and anxiety were also mentioned.

Based on the Caffeine Expectancy Scale, more than half (n=11) the participants reported

numbers that indicated problematic caffeine use for their overall score, as indicated in Table 2 with a grey highlight. Of note, four out of five of those that scored highly in the Anxiety/Negative Physical Effects category of the Caffeine Expectancy Scale also scored in the moderate or severe category for the GAD-7. However, four participants that scored in the moderate/severe category of the GAD-7 did not score highly in the Anxiety/Negative Physical Effects category of the Caffeine Expectancy Scale.

Pearson's correlations were run on the GAD-7 total score compared to Withdrawal/dependence, Social/ Mood Enhancement, Energy/ Work Enhancement and Anxiety/Negative Physical Effects category as well as the Total Caffeine Dependence score. P values of significance include  $p=0.002$  for GAD-7 score when run against the Anxiety/Negative Physical Effects category. No other p values were found to be significant. Averages and correlation values of significance are indicated in red.

**Table 2. Results of GAD-7 and Caffeine Expectancy Scale**

Participants	GAD-7 Score	Withdrawal Score	Energy Score	Social Score	Anxiety Score	Total Caffeine Score
1	6	13	15	6	13	47
2	2	13	17	14	6	50
3	9	7	9	6	6	28
4	0	18	18	18	3	57
5	2	18	18	12	13	61
6	4	10	15	3	9	37
7	18	17	13	18	18	66
8	9	17	13	18	6	54
9	5	9	18	15	4	46
10	8	3	10	12	12	37
11	3	18	18	12	3	51
12	4	12	15	12	6	45
13	2	14	14	12	8	48
14	5	18	18	13	9	58
15	10	14	18	11	16	59
16	3	18	15	13	6	52
17	7	9	15	9	7	40

18	7	12	18	16	7	42
19	0	4	13	6	6	29
20	2	17	18	15	3	53
<b>Average</b>	5.25	<b>13.05</b>	<b>15.4</b>	<b>12.05</b>	8.05	<b>48</b>
<b>Pearson's Correlation</b>		-0.055	-0.374	0.167	<b>0.656</b>	0.188

Out of 20 participants, 18 opted to answer the questions relating to where their time is spent within their work. The most common amount of time spent answering and sending emails was 10 hours per week (n=5) with values ranging from as low as two hours (n=1) to 30 hours (n=2). For research, the low was 0 hours per week (n=3) to 15 hours (n=1) as the upper value. The lower limit for time spent interacting with students is 2 hours per week (n=1) with a high of 40 hours (n=1). The majority of values fall between 10 to 25 hours per week (n=6). For lesson planning, the low is 0 (n=1) and the high was 30 (n=1) with 2 hours (n=6) being the most commonly reported. Hours spent teaching range from 3 (n=2) to 20 hours (n=1) with the most commonly reported value being 5 hours (n=4) followed by 8 hours (n=3).

All participants opted to answer the question, “What is the most stressful part about being a JMU faculty member?” While there was no repeated answer, several themes emerged including balance, service and lack of time/resources.

#### Balance

Some responses in this theme include “searching for balance,” “balancing research with heavy teaching load,” and “feeling like I’m always “on” and working, whether on campus or at home.”

#### Service

An additional theme included the service component of being a faculty member. Responses for this theme include, “Doing unexpected service/committee work with a deadline” and “Chairing

committee work”.

#### Lack of time/resources

Another large theme includes lack of time or resources. Responses include, “Too much work, not enough people to do it,” “workload inequities and inconsistencies,” and “Once semester has started and you’re in the midst of planning, grading prepping, quizzes, grading quizzes, prepping midterm exams... trips, committee meetings, research.”

A similar theme of time was present when asked about overall stressors, not limited to work. Responses for this included, “feeling like I have too much going on,” “time,” and “time limits; fast turnaround needs.”

#### Family

Family/children was also a commonly mentioned when asked about overall stressors. Responses including “Family issues,” “multiple family responsibilities and workplace juggling/mentoring,” and “Children”.

#### Work

Nine participants specifically mentioned work related stressors as their overall stressor. Responses for this theme include “job security,” “grading, fitting in time for research,” and “Book project, commuting, curriculum development.

After answering questions relating to what their stressors were, participants were asked how they relieve stress. Seven participants (n=7) reported using meditation. One (n=1) reported the use of medication and three (n=3) reported utilizing therapy as a stress management technic. However, the most commonly reported stress release method was exercise (n=17). The majority of participants (n=11) reported spending between 1-5 hours per week engaging in physical exercise, with only one (n=1) reporting engaging in zero hours of physical activity per week. The

high was 15 hours per week (n=2).

During the interview process, six major themes emerged. They are summarized in Table 2 and are discussed below using the subthemes that emerged from the main theme.

**Table 3. Quantitative Themes and Subthemes**

<b>Theme</b>	<b>Subtheme</b>
<b>Accessibility of Caffeine</b>	Ease Location
<b>Reasons for Consuming Caffeine</b>	Waking up Productivity/focus Comfort Habit Social
<b>Caffeine Dependency</b>	Quantity Negative Effects
<b>Caffeine in Higher Education</b>	Culture of Higher Education Aspects of Job Perception of Student Usage
<b>Stress</b>	Personal Stressors Faculty Stressors Balance Exercise
<b>Anxiety</b>	Anxiety from Caffeine Use Anxiety Management

### **Accessibility of Caffeine**

#### Ease of Access

Participants reported that caffeine is always readily available or accessible. Many could not remember a time where they were unable to consume caffeine if they wanted it. Most commonly, participants spoke about coffee as their source of caffeine, although soda and tea were also mentioned. It was overwhelmingly reported that caffeine is easy to gain access to.

I don't think I've ever been in an environment where I didn't have access to coffee.

(Interview 12)



I'm sure sometimes I've gone without caffeine, at least for a little while but I think, in general, I'm usually able to get a cup of coffee when I'm traveling. (Interview 15)

Many echoed each other in that it they would find a way to get caffeine if it was not easily accessible. This included making trips specifically to get caffeine, either to a store or a specific coffee shop.

If I couldn't have my morning cup, I'd probably find a way to get one. So, if I ran out of coffee grinds, I would stop for a coffee on my way home. Or, I think there's been times where I'm like, oh, I'm out of coffee. I'm going to make a trip to the co-op so I have it for the morning. So, I definitely always try to be prepared so I don't have to. (Interview 18)

Many participants stated that they would plan ahead to ensure they knew how they were getting their caffeine for the next day. For many, getting caffeine is ingrained in their routines. For several, this is because caffeine is easily accessible.

#### Location of Choice

Five different locations were mentioned for getting a cup of coffee or other caffeinated beverage, in addition to buying coffee at locations such as Costco, Sheetz and the Co-Op. The most frequently mentioned location was Starbucks. Starbucks was mentioned by 12 different participants and was popular because of its accessibility, specifically on James Madison University's campus.

When the Starbucks truck was parked back here, it was 112 steps from my desk to that door and that was awesome. (Interview 16).

Dunkin was also mentioned by six participants as their location of getting caffeine.

I drive through Dunkin' Donuts because they are the fastest. (Interview 2)

Coffee shops local to Harrisonburg, Virginia were also frequently mentioned. Greenberry's was mentioned by six participants, making it the most commonly mentioned local coffee shop, followed by Black Sheep, mentioned by four participants. The least frequently mentioned location for coffee was Shenandoah Joes.

Many participants reported consuming caffeine in their homes or in their office with either homebrewed coffee or bottles/cans of soda. However, most reported stopping on the way to campus for caffeine, for some in addition to consuming at home.

But, usually my husband makes coffee in the morning and he brings me a cup of coffee to my bedroom. And so I drink a cup of coffee while I'm getting ready. And then I would usually bring a to-go cup of coffee with me to my office, or I would stop somewhere and get a coffee. (Interview 14)

Overwhelmingly, participants reported that caffeine was very easily accessible to them. Additionally, they mentioned multiple different locations for getting caffeine, most commonly coffee. Speed and ease of location were the two most common determinants for where a participant purchased caffeine.

## **Reasons for Consuming**

### Wake up

Nearly all participants reported using caffeine to wake up in the morning. All 20 participants reported that when they do consume caffeine, they do so in the morning. For those that are tired in the morning, caffeine wakes them up.

What motivates me for caffeine is that it is also a stimulant and it helps start my day. So it's the combination of liking the taste and the rituals of coffee plus the physical, little push to get you going. That's what I like about caffeine. So I'm very selective of when I

enjoy it, only in the morning. (Interview 19)

For some, there are other times of the day that they need to be woken up and will turn to caffeine. The majority of participants use it in the morning in addition to other times throughout the day.

So I knew it was purely, I need to stay up for an assignment. I need to stay awake, so it was more, I can't afford to sleep. So it was meant as a stimulant, a legal stimulant.

College, same thing. Usually it would be in the morning, first thing in the morning, and then if I had to stay up late at night doing assignments and homework and stuff like that.

(Interview 6)

Participants discussed the long hours associated with being a faculty member and often cited caffeine as their method of staying awake during the long hours.

#### Productivity/focus

In addition to using caffeine to stay awake, participants overwhelmingly reported using caffeine as a tool to help them focus on their work. They cited caffeine as the source of their increased level of productivity.

I think that professors have a lot of work to do, and you might have to sacrifice sleep, or sacrifice family time, or sacrifice and number of things. A little extra pick-me-up always helps you get some additional things done. Plus caffeine is a natural stimulant. It does tend to help some people, I believe, focus better, myself included. Sometimes a little extra caffeine can help me get more done. (Interview 20)

Participants also cited using caffeine to help them focus on specific tasks associated with their job, such as research or grading.

Sometimes, if I'm sitting down to focus on something... sometimes, if I get one in the

afternoon, it'll be because I feel like I need to sit down and focus on something... It's usually something like either grading or working on science or something like that.

(Interview 15)

and

...for research, like if I'm working on a paper or if I'm working on a computer program for research that I'm doing, for anything I feel like the caffeine is an important boost to the energy and the mental focus to do my research. (Interview 1)

Participants as a whole felt that caffeine helped them feel more focused. This increase in focus made them feel more productive and more able to accomplish what they needed to accomplish.

### Comfort

Participants stated that consuming caffeine was a comforting sensation for many of them. They cited the warmth of hot coffee or tea as a source of comfort.

So the biggest motivation is it's warm and comforting, and if I don't drink enough I get a headache. Slight headache. But I enjoy [caffeine]. (Interview 2)

Many participants reported that the comfort of consuming caffeine is a strong motivator for them to consume. However, those that reported consuming soda as their primary source of caffeine did not echo this sentiment.

### Habit

The majority of participants shared that their caffeine consumption is habitual, and ingrained in their routines. For some, consuming caffeine is so habitual that they do not make a conscious decision to drink caffeine.

I wake up and I make myself a cup of coffee after I brush my teeth, and I drink that as I get ready. So it's pretty ingrained in my routine at this point. It's not necessarily a

conscious choice, so it's a little hard for me to answer that. It's more of like after I have my first cup that I always have, my addict cup, I then think, okay, do I want another cup? Should I stop on my way to work and get one or should I make a cup when I get to work or should I have a tea with caffeine in it? So usually have at least two beverages a day of caffeine. And one is like every day I just do it. It's just habit. (Interview 18)

For others, the caffeine is associated with a peaceful routine. One participant reported that coffee would lose its purpose if it was not associated with a peaceful morning.

I would just say as an overall, I'm more alert, attentive and a better mindset for the day because one, I've had the stimulant and two, I've had that calm like sitting time versus if I told you I had my cup of coffee and was running out the door, then I would say that the coffee would, it sort of loses its purpose. It is giving me that stimulant that's helpful to wake up, right, but it's more so the ritual of being able to sit down with it for a few minutes. (Interview 19)

This sentiment was echoed by many other participants. For many, they have very habitual morning routines, of which coffee is a part. For those that stated this, this morning routine relaxes them and gives them a sense of peace.

Now, it's maybe still to wake up, but also it's just a whole routine ceremony kind of thing. In the morning, this time of year specifically, I get up, I turn on the lights out in the living room. I start the fireplace, just some dim lights, but then I go to... [Susan] and I have an espresso machine, so I make my own latte from the espresso coffee. And I sit down and I'm either reading or writing or balancing my checkbook or... But just something very relaxing is the way I start the day, and usually with two cups of coffee. (Interview 17)

The largest difference between participants in the habitual aspect of consuming caffeine is the intentionality of it. For some, it's so habitual that they do not think about the decision to consume or not; it's automatic. For others, they consume caffeine with the intention of relaxing and starting their morning off peacefully. Regardless of the intention, nearly all participants reported that caffeine is a habitual part of their day.

### Social

Participants reported that they often used caffeine as a tool for social interaction. They enjoy the connection that comes from social interaction and that it naturally happens around caffeine.

So, I'll see a carafe of coffee and I don't know, it just seems like those are the places where people gather too. Right? So you want to get a cup of coffee and talk. It's kind of about community and relationships. (Interview 9)

For others, caffeine is more of an excuse to be social than a natural gathering place. Many reported asking colleagues to get a cup of coffee as an excuse to be social and take a break from work.

My colleague has a coffee maker in his office. His name is [John], so I call him [John] Bucks, instead of Starbucks. So part of it I questioned, is it because I need it? Is it more social because he's offering? I know I can go in there and start a conversation with him to take a break from my day. (Interview 13)

Others still, reported using caffeine as an excuse when collaborating with others on work. They used caffeine as an excuse to meet in a more casual setting.

One of the other department heads would say, "Oh hey, let's go." and so we use the trip to Starbucks over at Rose library to talk about work and work out problems together. And

so it's kind of an excuse to go get some coffee and be out of the building so people can't hear us. (Interview 14)

Regardless of the motivations behind being social, caffeine was reported to be a large part of relationships and social occasions for faculty members, including being social with other faculty members during the work day.

## **Dependency**

### Quantity

Some participants reported consuming startling quantities of caffeine. These participants stated that they were drinking caffeine continuously throughout the day.

I would be going through two of these before I was even done with my 9:30 class. And I have some students, I've had people run into some of my students and like, "Is she the one who carries the Diet Dew cup around all the time?" It could have been my blood supply. I drank that much of it. I think my highest consumption was probably closer to two liters a day." (Interview 10)

and

I measure my consumption in pots of coffee per day. So I probably on average have at least two pots of coffee.... I half-jokingly, half-seriously, maybe more seriously and less joking, say that if I could hook up an IV line [of coffee], I would do that. (Interview 6)

While some reported extremely high amounts of caffeine consumption, the majority reported drinking between 2-6 cups of caffeine per day, in varying sizes. A few participants reported consciously controlling how much caffeine they drink.

So if I have more than one cup of coffee in the morning, then I do not have something at lunch because I can feel it. If I only have one, then I'll usually consume for lunchtime.

And if I have for lunch time, I usually don't consume later on in the day. (Interview 5)

There is a threefold divide in how and how much caffeine is consumed. One group consumes constantly and consistently. The second group consumes less, but not intentionally and the final group consumes caffeine very intentionally and carefully.

### Negative Effects

There were a variety of physical negative side effects reported from consuming caffeine. They include difficulty sleeping, jitters, heart problems and anxiety.

If I have too much, heart racing. Probably jitters, heart racing, and with that then comes like, "Oh my gosh, what..." Have to think through like, "How many cups of coffee did I have?" So that's where I think the anxiety portion comes in because it's like kind of, "What am I doing?" (Interview 13)

In addition to side effects caused by consuming caffeine, many reported that they would experience headaches if they did not consume caffeine.

I would get unbelievably crippling headaches and I noticed it more on the weekends when I wasn't in the routine of coming to campus and trying to run classes. (Interview 10).

Feelings of jitteriness and headaches were the most frequently mentioned problems occurring from caffeine. Six participants reported feeling some form of jitters when they consume, and an additional 13 reported headaches when they did not consume their typical amount.

One participant reported a negative effect from consuming caffeine that was not physical. For this participant, the cost of consuming caffeine regularly is more worrisome.

I mean, maybe the caffeine consumption isn't so great for you, but I worry more about the average Frou-Frou drink costs you five, six, seven dollars a piece. If you were to save



that money for retirement, over time you'd be saving a lot of money. It's kind of like cigarette smoking. It's a nasty habit but it's also very expensive. (Interview 9)

Overwhelmingly, participants are aware of the problematic issues that consuming caffeine can cause. However, 19 out of 20 of them still consumed caffeine daily. Some admitted to self-regulating to avoid the negative effects, yet most drank large quantities on a daily basis.

## **Caffeine in Higher Education**

### Culture of Higher Education

A common theme the participants mentioned is the idea that caffeine and higher education go hand in hand. Many reported that the hours associated with academia and higher education are the reasons for such elevated levels of caffeine consumption among faculty members.

There is a culture I think in colleges and universities that it's like almost a mark of your studiousness, your ability to pull that all-nighter, and it's always like a rite of passage pulling an all-nighter. We have all these phrases for it, but it usually rests on some form of caffeine consumption. (Interview 16)

One participant hypothesized why higher education is so associated with unhealthy behaviors such as “replacing sleep and food and rest and social time with caffeine”. For this participant, it rests on the kind of person that seeks out a career in higher education.

I think in higher education, being a professor in some ways in that profession, that job draws in a lot of pace setting type A individuals. They're, for the most part, very motivated, very self-driven. And they tend to push themselves in very unhealthy ways and develop very unhealthy habits. (Interview 6)

Participants were adamant that a career in higher education results in a lot of long hours doing

tedious, time consuming work. There was a general consensus that the caffeine use among those in higher education is unhealthy.

#### Aspects of job caffeine is used for

There are several aspects of their job that participants reported using caffeine for. Several participants stated that teaching classes was easier after having caffeine.

I don't know if I've ever taught not having had my caffeine in the morning. But I feel like I definitely need it just for the boost of standing up in front of the class and thinking clearly and speaking clearly. (Interview 1)

Similarly, participants spoke about the energy level needed to conduct a successful class was easier to maintain after consuming caffeine.

Just to have sustainable energy in class that they can catch on to. I mean. It's more than just standing up there talking about information, it's like being excited about it to where people want to come to class and that takes a different level of energy than what I'm used to needing in just my home life... You've got to be excited about the material whether it's been a long weekend or a long day before, whatever, and you've got to get them excited about learning the material. So, I think I used it as a prop for that. (Interview 10)

Another factor of their job that participants felt they needed caffeine for includes meetings with other faculty and administrators. The majority of participants stated that students energized them more often than drained them. Instead, it was their colleagues and bosses that they felt they needed caffeine to handle.

It's not even the bullshit. It's the meetings with administrators that can drag. So an hour long conversation with a student flies by. An hour-long conversation with my peers flies by. An hour-long administrative meeting has a lot of low, dull points. Right? And so, it's

a lot of listening and paying attention. And so the caffeine helps me to keep myself awake and functioning and paying attention during that entire time. So it's less of that it's stressful and it's more of getting through all of... It's almost like sitting in a lecture hall again. (Interview 5)

Another common reason participants reported needed caffeine is with deadlines and getting through all the work. As previously discussed, participants feel that caffeine assists in focus and productivity of their tedious work, which is a large portion of their job.

So, it's usually I've got a project and I've got to be mentally sharp and not fuzzy and tired or not exhausted. So, I need to be able to... and I think this just comes from the culture, in higher ed. I've got to read this book, I've got to read this paper, I've got to write this thing and I need... A boost or a little bit of juice to get over that hump.

The aforementioned three aspects are the three most common aspects of participant's jobs as faculty members that they feel need caffeine for. While some are more reliant than others, the majority felt that they needed caffeine for at least one aspect of their job.

#### Perceptions of Students' Use

When asked about perceptions of caffeine use as problematic among their peers, many faculty noted that they don't find their caffeine use as problematic. They continued to say, however, that they found the students' use to be problematic.

I don't know among my peers, but I do find it to be problematic among the students, because I do think that they're being encouraged, maybe in the way I was by family, to kind of become caffeine addicts. And the amount of coffee that college students drink today is way, way, way far beyond what college students drank in my generation, undergraduates in particular. (Interview 9)

A general theme was that participants felt that undergraduate students consume significantly more caffeine now than the previous generations that are now faculty.

I don't see my generation as being as coffee or caffeine driven as the younger... I have... my youngest son's 15, my oldest stepson is going to be 32 in March. And in the grouping of like the 25 to 35 year olds, I think they are way more dependent on caffeine but particularly coffee based products than I will ever be. (Interview 10)

Approximately half of participants reported that they found students' use to be problematic in some way, while the other half reported that there was no problem, primarily because they themselves consumed such high rates of caffeine when in undergrad. For some, they recognized a problem but knew they themselves also consumed that much caffeine during their undergrad.

I think that I worry about it in the students sometimes. I know that they take caffeine pills sometimes. I'm not supposed to know, but I know someone took Adderall and other types of stimulants and I think that especially when our bodies are developing still, I worry about that level, but I also drank that much, I also had that much caffeine in my system when I was that age. (Interview 8)

There is a lot of caffeine use associated with higher education. Certain aspects of being a faculty member and simply being a part of higher education cause a dependency on caffeine, according to participants. This extends beyond faculty members to include students as well.

## **Stress**

### Personal Stressors

Overall, participants reported having a high level of stress. For some, this is what causes them to consume more caffeine.

So, there's a lot of stress. I mean I lay awake at night trying to think about stuff. Hence,

why I need four cups of coffee in the morning. (Interview 6)

Overwhelmingly, participants cited family as their biggest, non-work-related stressor. Eighteen out of 20 participants mentioned that their family is a source of stress. This includes, parents, spouses, children and pets.

### Faculty Stressors

Many aspects of their job are stressful to participants. One of the most frequently mentioned stressors is grading. For some it is keeping up with all the assignments that need to be graded and the timing associated with it.

It's always keeping up with the grading. You assign assignments because you think they're valuable and the students will learn from them and I hope that they do, but then you have to give constructive feedback and grade them. And that part, that's, that's one of those things, it's always kind of looming there to where you're like, ah, I gotta do that. (Interview 4)

For the participants in more subjective fields, assigning grades that are fair to all involved is stressful since the grades can be argued and are up to professional interpretation.

I think there's a lot of responsibility and really making a choice, especially with subjective grades, to make a responsible choice for how you feel students performed, that's fair to them and fair to the overall class and trying to be as fair as possible, but also loving on the students. (Interview 8)

The other most frequent stressor for faculty is how much they care about students. Faculty members report that they care a tremendous amount about their students and this translates into stress for them.

As a faculty member, the biggest stressor I have here at this institution, would be making

sure that when I step into class, so in my teaching responsibilities, when I step into class and when I'm working with students or even having meetings with students, that I'm always bringing my A+ game. You guys deserve the best. So the biggest stressor on my part is self-induced with the expectations that I am always on and thinking clearly and bringing the best classroom experience. (Interview 6)

Faculty also are trying to find a balance between treating students kindly and pushing them to succeed while creating professional boundaries. For some this is a challenge.

So mostly student issues, I'd say. Trying to make sure that I both treat them with respect and hold them accountable. And finding ways to do that in a way that I'm comfortable and that they don't perceive me as being a big bitch if they don't get the answer they want. (Interview 18)

While there are other stressful parts of being a faculty member, the aforementioned are the most prominent, largest stressors participants reported.

### Balance

Similar to faculty stressors, participants reported that they felt a lack of balance in their professional life, and with their work-life balance. Professionally, they reported many different categories of work that fell under their job description as faculty.

So, I'd say probably the bigger stressors is that we have kind of a trifecta on how we're evaluated. So there's the teaching component which is easily 65% of how I'm evaluated. But then there's research and service... It's a juggling act and you have to be a multitasker because they're big enough pieces of the puzzle together that you can't ignore either one of them for end of year evaluation purposes. ... So, it's a lot of balls in the air. (Interview 10)

With work life balance, participants reported being unmotivated to do their outside obligations when they arrive home after working long hours.

So it's really just kind of, I guess balancing work and outside obligations, particularly the fact that I don't want to do the outside obligations at night, which is the only time I have to do them.

Finding balance is a difficult task for faculty members. It is difficult to find time to handle personal and familial obligations since time is limited due to the long hours worked.

### Exercise

All but one participant reported that they intentionally incorporate physical activity into their life. The majority of them stated that exercise is a stress relief for them.

Well, I exercise, so that's a really good one for me. I try to exercise five times a week, usually do it in the evening. So that's probably my biggest stress reliever. (Interview 12)

While many participants incorporated intense physical activity into their life, a large portion included walking or biking as their main source of exercise. They reported that walking or biking significantly reduced their stress levels. Exactly one fourth (n=5, 25%) of participants stated that they walk or bike to campus daily.

I started riding a bike to campus and I find that at the end of the ride, I'm happy.

Obviously, something's happened on the ride that just makes things better.... I also walk a lot. So if I get uptight about grading or somebody pissed me off because they did a lousy job, I'll go for a walk for five minutes and then come back and do the next one. So the anger at the last bit of stupidity I had to deal with is gone before I touched the next one so I don't punish the second student for the first student's sins. (Interview 11)

For many of those that walk, the walking is less of a form of exercise and more of a stress

reliever. For those that report walking or biking, they find that it helps them clear their head and transition into and out of the work day.

I live close enough to campus that I can walk. It's a little over a mile. So when the weather gets nicer I will be walking to and from work and that's a great source of exercise, but also kind of, you know, stress, anxiety. It's a nice transition mentally.

(Interview 16)

Some faculty try to incorporate physical activity into their work day. They try to move during the day instead of staying stationary at a desk.

And so, I set this timer and try to focus on a task for 25 minutes. And then when it's over I try to make myself stand up and walk around, go do something. Sometimes I'll try to incorporate small exercise, I'll do some squats or something for a few minute and then get back to work. So I know it's not sustained physical activity, but at least I'm trying to get more intentional about moving.

Participants reported that exercise is an integral part of their life. For the majority of them, it is their primary form of stress relief and helps them feel better, both physically and mentally.

## **Anxiety**

### Anxiety with Caffeine

Participants did report an association between caffeine and anxiety. Many found that their anxiety was worse when consuming caffeine.

Some of my colleagues drink coffee all day, every day. And some of them are aware of how it just causes the anxiety to go off the charts and they just go cold turkey on coffee for a while until they can get all their stressors down again. (Interview 14)

For some, they recognize that they did not have anxiety until they began drinking caffeine.



Oh, yeah it definitely now increases my anxiety more than.... I guess I never had anxiety before. (Interview 15)

### Anxiety Management

The management of anxiety is very closely tied with stress relief for participants.

Exercise continues to be a source of relief from anxiety.

Well, I think the walking actually helps me reduce stress and anxiety. I think that's why I got kind of started on that. It allowed me to just kind of let go and not have racing thoughts in your head. (Interview 9)

Participants also reported having very little anxiety to begin with. Many of them stated that they were not anxious people and don't tend to experience anxiety.

I don't know that I tend to hit a lot of anxiety. (Interview 12)

For some, the anxiety they do experience is positive anxiety. Multiple participants described anxiety as a positive thing, even a necessary feeling for educators.

I always say, "If there's not a little anxiety or nervousness for your first day of school every single year, it's probably time to get out of education." So it just shows that you care, it just shows that you're apprehensive about it in some ways, but that goes away pretty quickly. (Interview 17)

For those that do experience anxiety, they use similar ways to handle it. Anxiety management techniques include positive self-talk as well as breathing and getting organized.

And I do a lot of self-talk as far as saying, "you've got this because you had to deal with this person." After having dealt with this person, I have my, my, nemesis. (Interview 5)

For some, simply acknowledging the anxiety is enough. Admitting that they are anxious is sufficient for them to handle it.

... and [anxiety is] just kind of like my buddy now that lives on my shoulder and I'm like, "Hey dude, we know each other." Sometimes it gets overwhelming. Sometimes I get the really bad body shakes and the physical reactions, but mostly it's just kind of knowing myself and knowing where the line between my anxiety and me, kind of is. So it's like I know it's there, but that doesn't mean it has to win today. (Interview 8)

### **Specialty Drink of Choice**

Participants were asked at the end of each interview what their favorite or most indulgent caffeinated beverage would be. Some reported that they would want a drink from a specific location like Starbucks, Dunkin, or Greenberry's, which were the three most common locations in descending order. However, some were more specific and wanted beverages from specific countries. The most specific was a spice chai from Kenya. The spiced chai included black tea, cardamom, cinnamon and cloves with goat milk. Another wanted a café con leche from Barcelona, Spain.

Six participants reported wanting some sort of latte. Some wanted it flavored with flavors such as Hazelnut while others just wanted plain steamed milk. Specific sodas, such as Diet Dew or a "super cold" Pepsi in a restaurant with ice were mentioned. The most specific soda that a participant wanted was a Dr. Pepper shake from Whataburger.

## **Chapter 5: Discussion and Conclusion**

The literature supports the finding that caffeine use is rampant on university campuses. This research has demonstrated that faculty are a part of this rampant use. A standard 8 oz cup of coffee can contain between 72-130 mg of caffeine. For espresso drinks, one shot contains 58-76 mg of caffeine (Higdon, Frei, 2007). In a study done by Mahoney et al., the average college student consumes 159 mg of caffeine per day (2019). This equates to no more than 2.5 cups of coffee per day for the average student. In this study, professors reported consuming upwards of eight or more cups of coffee per day, with the majority consuming at least 2.5 cups daily. This is indicative of a more problematic use among faculty than students. While this study is not able to conclusively state that rates of caffeine addiction is higher among faculty than students, it opens the door for further research on this topic.

It is of interest that the majority of faculty do not see their caffeine use as problematic yet see problems and higher levels of dependency among students. This is in direct contrast to the aforementioned study that concludes that students average only 159 mg of caffeine per day, which is below the national average of 280 mg per day. However, this study may be biased to participants that engage in higher uses of caffeine than their peers due to a personal interest in the research topic when agreeing to participate. More research should be conducted with a larger sample size to assess average rates of consumption among faculty. This study is also limited to faculty at James Madison University. More research would be necessary using multiple universities surrounding the availability of caffeine on campus and faculty rates of consumption to determine if faculty consume more caffeine based on an increased availability.

At James Madison University, there are two Dunkin's, two Starbucks and a Starbucks truck, several POD markets that sell pre-made coffee beverages as well as soda, and JavaCity.

This is in addition to the coffee machines in D-hall and E-hall and the many vending machines around campus that sell coffee and soda. It is not unexpected to see such widespread addiction when caffeine is so readily accessible. There are simply more options for caffeine readily available to faculty at their place of work than for most other fields that most commonly have a coffee pot in the office kitchen. Participants reported frequently using “getting a cup of coffee” as a tool to meet with colleagues, which may be a part of the culture of higher education that was mentioned by several participants. This research supports that caffeine use in higher education is extremely prevalent, although more research would need to be done comparing different fields.

Caffeine is a legal stimulant, as noted by several participants. As a drug, it has a level of dependency and addiction associated with its use. Many participants reported experiencing symptoms of withdrawal when they are unable to consume caffeine such as headaches. This is indicative of a widespread addiction to caffeine among faculty. While some participants experienced withdraw symptoms, others noted that they would never experience withdraw simply because they are never without caffeine for an extended period of time. This is in agreement with previous research that supports caffeine withdrawal as being a legitimate medical condition.

It is worth noting that several participants reported experiencing negative effects of consuming too much caffeine while also reporting such high quantities of unregulated caffeine consumption. While the majority of participants reported healthy habits such as regular exercise, it is questionable if their caffeine habits are healthy for them. For many, their daily consumption of caffeine results in racing heartbeats, feelings of anxiety, and jitters. It is fair to conclude that these negative effects can inhibit the ability to successfully complete stationary tasks such as grading or conducting research, both of which were mentioned as tasks that benefit from caffeine

use. These symptoms of caffeine consumption mimic the symptoms of anxiety, such as irregular heart beat and feelings of anxiety (Anxiety and Depression Association of America, 2018c). Further research should be done to determine if the use of caffeine statistically improves the ability of faculty to accomplish these stationary tasks.

Of note to this study, several participants noted an association between increased levels of caffeine use and increased levels of anxiety felt. This is supported in part by the Pearson's Correlation run between the score from the Generalized Anxiety Disorder – 7 scale and the Caffeine Expectancy Scale subcategory for Anxiety/Negative Effects, which had a correlation of positive 0.656 and was significant at  $\alpha = 0.001$ . There was a weak, positive association between the Total score for the modified Caffeine Expectancy scale and total score for the GAD-7 scale ( $p = 0.188$ ). The Caffeine Expectancy Scale did not measure total consumption of caffeine so it is difficult to conclusively state if more caffeine equates to more anxiety felt, although qualitative evidence supports this hypothesis. However, studies done on secondary school children indicate that high caffeine consumption (1000+ mg/week) result in feelings of anxiety (Richards & Smith, 2015). Additionally, a study done by Veleber and Templer in 1984 found that increased doses of caffeine have a direct correlation on anxiety (Veleber & Templer, 1984). While this study is not able to conclude if increased caffeine consumption causes feelings of anxiety, it supports the conclusion of other studies that caffeine and anxiety are positively associated.

For participants, family was the largest stressor outside of work. For many, work and family life were intertwined. Several participants reported working long hours, including nights and weekends. This could have a large effect on family dynamics and the ability to meet familial obligations. However, when asked about their largest stressor overall, the majority reported that

some aspect of work was their largest stressor. The idea of balance emerged frequently. Balancing both family and a demanding job seemed to a large source of stress for participants. With the long hours associated with working in higher education, many felt that they did not have the time or motivation to complete their outside obligations. Since financial concerns were also a common stressor mentioned, it would make sense that participants felt an obligation to complete work responsibilities satisfactorily to keep their job secure. A study done by Reevy and Deason (2014) found that non-tenured faculty experience increased stress and anxiety when compared to tenured faculty because of the lack of security and additional workload required of non-tenured faculty (Reevy & Deason, 2014). While the current study did not examine the effect of tenure on stress and anxiety, it was reported that faculty felt overwhelmed by workload and had a difficult time balancing their requirements. This expands on the research done by Reevy and Deason that an overwhelming workload is associated with anxiety for all faculty.

Specific to faculty stressors, the majority of faculty stated that the biggest joy they received from their job included interactions with students. As one participant noted, meetings with and for students would “fly by”. The aspects of their job that do not directly involve students emerged as the most stressful parts. This includes research, service and balancing the obligations they have in addition to teaching. It is of note that both the stressful and joyous parts of their job are included in what participants feel that they need caffeine for; the tedious aspects of grading and research were the two most frequently mentioned responses when asked what aspects of their job for which they needed caffeine. This is in agreement with the study done by Gmelch, Wilke & Lovrich in 1986 that found that the end tasks, such as teaching, are the least stressful. It is of note that both the study done by Gmelch, Wilke & Lovrich and the current study found that the tedious responsibilities of faculty, such as grading and meetings, were the most

stressful. The present study also found that these aspects were the ones faculty most used caffeine.

Exercise was the most common resource for reducing stress and anxiety for participants. All but one participant reported that exercise was an important and frequent part of their life. For the majority, they specifically used exercise as a method to reduce stress and anxiety when those feelings were prominent. Exactly  $\frac{1}{4}$  of participants actively commute to campus and noted that this time helped them transition into and out of the work day while also actively reducing levels of stress and anxiety. These findings contradict the findings of Mutrie and Hannah (2013). Mutrie and Hannah found that physical activity was directly linked to a decrease in depression, but not anxiety, when the exercise was done during leisure time. No correlation was found between depression and physical activity done at work. (Mutrie & Hannah, 2013). The current study suggests a decrease in anxiety levels with an increase in exercise done both during leisure time and while at work.

Exercise was also built into the work day for some participants. They either built exercise into their work routine, or took a break from work specifically to exercise. The freedom faculty are given in their workday and the long hours regularly worked most likely allows for exercise to be built into the work schedule. A large majority of careers do not allow for the flexibility in the work day that faculty are given. This flexibility allows for faculty to build exercise into their workday. More research would need to be done to determine if this flexibility is a part of the “culture of higher education” that many participants mentioned that allows for them to casually consume caffeine with their colleagues.

The management of anxiety was diverse for participants. Some felt that they simply were not anxious people while others felt that acknowledging their anxiety was sufficient to managing

it. The average score on the GAD-7 for all participants was 5.25. A score of five and below is indicative of mild to no anxiety. This score is just over that category and indicates that participants have mild to moderate anxiety. More research would need to be conducted to determine if this level of anxiety is consistent among faculty members as a profession.

Overall, it is clear that more research must be done on the caffeine consumption habits of faculty. Research surrounding anxiety and stress specific to that of a faculty member must also be conducted. This study adds to the literature on these topics. However, this study is limited in its ability to conclude definitive answers. Instead, it should be used as a basis for more conclusive research.

### Limitations

The primary limitation for this study was the lack of diverse participants. This study is a part of a requirement for the Honors College, of which the researcher is a part. As such, Honors College faculty were used as participants at a much higher rate than any other academic college. Additionally, this study is limited to only a small number of faculty members at one university. In order to draw conclusions about these topics for all of academia, more universities must be included with a much larger number of participants.



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## **Appendix A: Recruitment Letter**

Are you a JMU faculty member interested in being involved in research surrounding caffeine consumption and anxiety? I am conducting research for my Senior Honors Thesis with support from Dr. Erika Collazo-Vargas and would like to spend an hour or less with faculty members at JMU to answer questions in an interview related to caffeine, personal stressors and anxiety. If you would be interested in being a part of this research please contact me at [larocceb@dukes.jmu.edu](mailto:larocceb@dukes.jmu.edu) with the times you are available on Monday's after 1pm, Tuesday-Thursday before 11 am and Friday's after 10 am.

Thanks,

Erica LaRocca

## **Appendix B: Consent to Participate in Research**

### **IRB Protocol # 20-1280**

### **Consent to Participate in Research**

#### **Identification of Investigators & Purpose of Study**

You are being asked to participate in a research study conducted by Erica LaRocca from James Madison University. The purpose of this study is to discover the motivations of JMU faculty members to consume caffeine and how this affects anxiety. This study will contribute to the researcher's completion of her senior thesis.

#### **Research Procedures**

Should you decide to participate in this research study, you will be asked to sign this consent form once all your questions have been answered to your satisfaction. This study consists of a survey and interview that will be administered to individual participants in their office. You will be asked to provide answers to a series of questions related to personal stressors, anxiety and caffeine consumption. Participants will be audio recorded.

#### **Time Required**

Participation in this study will require no more than 60 minutes of your time.

#### **Risks**

The investigator does not perceive more than minimal risks from your involvement in this study (that is, no risks beyond the risks associated with everyday life).

The investigator perceives the following are possible risks arising from your involvement with this study: Discomfort arising from personal questions. You will be given a list of resources to ease discomfort after the session.

#### **Benefits**

Potential benefits from participation in this study include awareness of stressors, anxiety and caffeine consumption. Benefits as a whole are to add to the body of research surrounding this topic.

#### **Confidentiality**

The results of this research will be presented at the Honors Symposium. The results of this project will be coded in such a way that the respondent's identity will not be attached to the final form of this study. The researcher retains the right to use and publish non-identifiable data. While individual responses are confidential, aggregate data will be presented representing averages or generalizations about the responses as a whole. All data will be stored in a secure location accessible only to the researcher. Upon completion of the study, all information that matches up individual respondents with their answers including audio recording, will be destroyed.

## Participation & Withdrawal

Your participation is entirely voluntary. You are free to choose not to participate. Should you choose to participate, you can withdraw at any time without consequences of any kind.

## Questions about the Study

If you have questions or concerns during the time of your participation in this study, or after its completion or you would like to receive a copy of the final aggregate results of this study, please contact:

Erica LaRocca  
Health Sciences  
James Madison University  
larocceb@dukes.jmu.edu

Dr. Erika Collazo-Vargas  
Health Sciences  
James Madison University  
Telephone: (540)568-8975  
collazem@jmu.edu

## Questions about Your Rights as a Research Subject

Dr. Taimi Castle  
Chair, Institutional Review Board  
James Madison University  
(540) 568-5929  
castletl@jmu.edu

## Giving of Consent

I have read this consent form and I understand what is being requested of me as a participant in this study. I freely consent to participate. I have been given satisfactory answers to my questions. The investigator provided me with a copy of this form. I certify that I am at least 18 years of age.

— I give consent to be audio recorded during my interview. \_\_\_\_\_ (initials)

\_\_\_\_\_  
Name of Participant (Printed)

\_\_\_\_\_  
Name of Participant (Signed)

\_\_\_\_\_  
Date

\_\_\_\_\_  
Name of Researcher (Signed)

\_\_\_\_\_  
Date



### Appendix C: Questionnaire

- 1) What college do you teach in? \_\_\_\_\_
- 2) What is your gender? \_\_\_\_\_
- 3) Are you a full time faculty member? \_\_\_\_\_
- 4) What type of degree do you have? \_\_\_\_\_
- 5) How many years have you been employed by JMU? \_\_\_\_\_
- 6) What is your title at JMU? \_\_\_\_\_
- 7) Do you regularly consume caffeine? \_\_\_\_\_
- 8) If yes to question 7, what age did you begin to regularly consume caffeine?  
\_\_\_\_\_
- 9) What caffeinated beverages do you prefer to consume? Circle all that apply.  
Coffee    Soda    Energy Drinks    Tea    Other: \_\_\_\_\_ Do not consume caffeine
- 10) What size caffeinated beverage do you typically consume? Circle  
Small (less than 12 fl oz)  
Medium (13- 16 fl oz)  
Large (17+ fl oz)  
Mixed size  
I do not consume caffeine
- 11) Do you consume caffeine in any other forms besides beverages? Chocolate, Caffeine pills, coffee ice cream etc \_\_\_\_\_
- 12) How many caffeinated beverages do you drink per day, in the size selected above \_\_\_\_\_
- 13) What time of day do you prefer to consume caffeine?  
Morning    Afternoon    Night
- 14) What, if any, medical conditions do you have that caffeine effects? \_\_\_\_\_
- 15) What, if any, negative reactions to caffeine have you experienced? \_\_\_\_\_
- 16) How much time do you devote to the following activities per week in hours:  
Email \_\_\_\_\_ Research \_\_\_\_\_ Interacting with students \_\_\_\_\_ Lesson planning \_\_\_\_\_ Teaching \_\_\_\_\_
- 17) What is the most stressful part of being a JMU faculty member?  
\_\_\_\_\_
- 18) How much time per week, in hours, do you spend engaging in physical activity? \_\_\_\_\_
- 19) What are your biggest stressors? \_\_\_\_\_
- 20) What of the following do you use to relieve stress? Circle all that apply  
a) Meditation   b) Exercise   c) Medication   d) Therapy

	Over the last 2 weeks, how often have you been bothered by the following problems?	Not at all	Several Days	Over half the days	Nearly Every Day
21)	Feeling nervous, anxious or on edge				
22)	Not being able to stop or control worrying				
23)	Worrying too much about different things				
24)	Trouble relaxing				
25)	Being so restless that it's hard to sit still				
26)	Becoming easily annoyed or irritable				
27)	Feeling afraid as if something awful might happen				

		Very Unlikely	Unlikely	A little unlikely	A little likely	Likely	Very likely
28)	I would experience caffeine withdrawal if I went without caffeine						
29)	I need to have caffeine every day						
30)	I would get a headache if I went without caffeine						
31)	Caffeine picks me up when I am feeling tired						
32)	Caffeine makes me feel more alert						
33)	Caffeine makes me feel more energetic						
34)	Conversations are better when using caffeine						
35)	Caffeine makes me friendlier						
36)	I feel more sociable after having caffeine						
37)	I am easily stressed after having caffeine						
38)	Caffeine makes me jittery						
39)	Caffeine makes me feel nervous						

## **Appendix D: Interview Discussion Guide**

### **Caffeine Consumption and Dependency**

- 1) What motivates you to consume caffeine? Have these motivations changed over your lifetime?
- 2) Take me through a day in terms of your caffeine consumption. What form do you consume and from where? What time do you consume it?
- 3) Have you ever encountered issues surrounding your caffeine consumption? What were they?
- 4) Do you view caffeine consumption as problematic among your peers at JMU? Why or why not?
- 5) How do you feel if you can't consume caffeine?
- 6) Are the times in the day or semester that you are more likely to consume caffeine? What times?
- 7) What aspects of your job do you feel you most need caffeine for? (email, teaching, interacting with students, research, lesson planning)

### **Stressors and Anxiety:**

- 8) What are your biggest stressors overall?
- 9) What are your biggest stressors as a faculty member?
- 10) Is there a time in the academic year you experience more stress?
- 11) Take me through a typical workday for you? What activities consume most your time?
- 12) Take me through a typical weekend day for you? What activities consume most your time?
- 13) Take me through your typical stress release methods.
- 14) How do you manage any anxiety you may experience?
- 15) If, and how do, you incorporate physical activity into your life? What type and rigor of exercise do you typically engage in?

### **Bonus Question**

What's your favorite drink order?