The Perception of Second-Year Medical Biology Students on Their Coffee Consumption as Aid for Their Learning

Acosta, Mary Coleen[1]; Enriquez, Zinnia Lyanna[2]; Lomibao, Patricia Marian[3]; Nuez, Jose Joshua[4]; Orencia, Brianna Julia[5]; Sarmiento, Maria Carmela[6]; Cerenado, Kristine[7*]

[1,2,3,4,5]Institute of Arts and Sciences, Student, Far Eastern University-Manila, Manila City, 1008, Metro Manila, Philippines
[6]Institute of Health Sciences and Nursing, Student, Far Eastern University-Manila, Manila City, 1008, Metro Manila, Philippines
[7*]Faculty, General Education Department, Institute of Education, Far Eastern University-Manila, Manila City, 1008, Metro Manila, Philippines
Email address: orenciabrianna@gmail.com

Abstract*— This study explores the perception of coffee consumption among second-year Medical Biology students as a learning aid, primarily focusing on how coffee is used to enhance focus, productivity, and energy levels for academic demands. Using a descriptive quantitative approach, data were collected from 33 students through an online questionnaire. The Likert scale was utilized to measure students' perceptions, with weighted mean calculations providing insights into the intensity of these perceptions. The majority consumed moderate amounts of coffee, with most drinking one to two cups daily. The students' coffee consumption increased during midterms and finals of the semester. Furthermore, the main reason students reached for coffee was to improve focus and productivity while studying. Moreover, students are unsure if it directly contributes to academic success, but some students believe that they could perform well without coffee and still recognize its benefits. Overall, moderate coffee consumption was common among medical students, and they viewed it as a helpful tool for studying during demanding times.*

Keywords*— Academics: Coffee consumption: Effects: Learning aid: Medical Biology students: Perception.*

I. INTRODUCTION

A tool or technique that is utilized to improve the student's understanding and retention levels is referred to as a learning aid, which comes in various forms, such as auditory aids like films and lectures; visual aids, which can be diagrams and posters; and the traditional aids, like blackboard or books (UNESCO, n.d.). Relative to this, the learning style of students is defined as the preference of learning and processing of information, with numerous sorts, wherein the four main learning types are visual, auditory, kinesthetic, and reading or writing. As indicated by the Bay Atlantic University (n.d.), visual learning styles are students who absorb knowledge better through the use of graphs, charts, maps, and other visual aids. Whereas auditory learning style prefers information to be stated or heard for a more effective learning. On the other hand, the kinesthetic learning style is learning preference where individuals learn best through hand-on experience. Whilst the reading or writing learning style refers to the learners who prefers to learn through speaking, writing, and listening. The learning style of a student is a personal preference that varies, for this reason, a student must tailor their learning aids to what

will be the best complement to their learning style. Learners with various learning styles may opt to use coffee as an aid in stimulating and enhancing their cognitive and maintain focus while learning. Visual learners may rely on coffee to stay focused in discerning visual diagrams, while auditory learners may find coffee consumption beneficial for sustaining energy levels and maintaining focus during discussions. Similarly, kinesthetic learners and reading/writing learners may rely on coffee to sustain the concentration levels and energy levels. Corresponding this to the situation of different types of learners, college students consuming coffee serves as a resource for students to optimize their study sessions due to its effects on the body. As the academic learning increases, students rely on coffee to boost their attentiveness and be able to assimilate new concepts.

In relation to the idea mentioned above, due to the physiological effects of coffee towards the human body, college students consume coffee to optimize their study session. Coffee consumption among students has become a ubiquitous aspect of academic life, to fuel their study sessions. According to a study conducted by the National Coffee Association (NCA) in 2020, college students in the United States are among the highest consumers of coffee, with approximately 79% of students reporting that they consume coffee regularly to help them stay awake and alert during classes and study sessions (National Coffee Association, 2020). The benefits of caffeine, which is the main ingredient for coffee, are well-documented, with numerous studies enumerating that it is known to act as a psychostimulant and induce wakefulness (Parry et al., 2023). Most college students stated that they drink coffee to feel more alert or to improve their mood and academic performance (Riera-Sampol et al., 2022).

Coffee has been known to have both short-term and long-term effects towards the body of the consumer (Bertasi et al., 2021). Excessive coffee consumption, typically defined as more than four (4) cups per day, can lead to adverse effects such as insomnia, jitteriness, digestive issues, and increased heart rate (Wikoff et al., 2017). Furthermore, a study by AlSharif et al. (2023) reveals the drawback of excessive coffee intake results in poor quality sleep. This also leads to heightened sensations

of exhaustion and irritability that results in decreased retention levels and productivity levels (Alfawaz, 2020), potentially affecting the academic performance of the students, defined as the capacity of students to complete academic assignments and is evaluated based on impartial standards such as the grade point average and final course grades (Al Matalka & Al Dwakat, 2022). To add, high caffeine intake has also been shown, in a study by Bertasi et al. (2021) to have a positive link to signs of depression and anxiety in college students. Consequently, those who were more at risk of having depression or anxiety are found to perform poorer in their academics (Awadalla et al., 2020). Hence, while coffee consumption can improve a student's academic performance in short-term situations, the long-term effects of excessive coffee consumption can potentially negatively affect their academic well-being.

In this study, the researchers aim to address two primary research questions related to students' coffee consumption habits and its perceived effects on learning:
1. What is the demographic profile of the respondents?
2. What are the main reasons for students' coffee consumption?
3. What are the effects of coffee as a learning aid, as perceived by the students?

These questions are significant as understanding the motives behind students' coffee consumption can provide insights into prevalent behaviors and lifestyle choices among this demographic. Additionally, exploring the perceived effects of coffee on learning can offer valuable information regarding the potential impact of caffeine intake on academic performance and study habits.

Despite the widespread use of coffee as a stimulant among students, there is a lack of comprehensive research examining the specific reasons for consumption and the perceived benefits or drawbacks of using coffee as a learning aid. Addressing these questions will contribute to a better understanding of the role of coffee in the lives of students and its implications for educational practices and student well-being.

Examining how coffee consumption influences students' perceptions of its effectiveness as a study aid provides valuable insights on factors that may influence their study habits. By understanding whether students view coffee positively as an aid for learning, this research can be a guide for the students to have self-evaluation on their dependency on coffee and whether or not they would rather choose an alternative option as their learning aid. Furthermore, it sets a foundation for future researchers to further investigate whether coffee has a placebo effect on the students' perceptions based on the results obtained from the study.

II. METHODOLOGY

A. Research Design

The researchers utilized a descriptive method in this quantitative study in gathering the necessary information for the stated research questions. The use of descriptive methods allowed the researchers to gather and analyze the data about the perception of drinking coffee of second-year Medical Biology

students as their aid for learning. This produced accurate interpretations of the given data from the participants.

B. Research Sampling and Population

To select the participants of the study, the researchers chose the snowball sampling method since this study requires specific respondents who are coffee drinkers in order to yield authentic results and ensure accurate representation of the needed demographics. The researchers conducted an initial groundwork, consisting of short interviews with students to determine which among them are coffee drinkers. These interviews served as a screening process to identify individuals who consume coffee. This also included requesting some of the interviewees to recommend other individuals who are confirmed coffee drinkers within their circles, thus utilizing existing social connections among the population. A total of thirty-three (33) coffee drinkers were identified among the second-year students of Medical Biology.

C. Research Instruments

The researchers used Microsoft Forms to obtain data from the respondents since it allows creation of questions using Likert scales, and because results can be easily analyzed with charts immediately generated after the responses are collected. The study adopted an approved structured questionnaire from Bindbeutel's study titled, "Correlation between a Students' Academic Performance and Caffeine Intake" in 2016 as its primary data collection tool.

The researchers utilized collection of data through Likert scale due to its capacity to measure the intensity of students' perceptions which yields numerical data that was analyzed. The Likert scale interval used was from the study of Nyutu et al. (2020).

TABLE 1. Likert scale table.

Likert scale description	Range	Midpoint	Weight allocation
Strongly Disagree (1)	1.00-1.80	1.40	1
Disagree (2)	1.81-2.60	2.21	2
Undecided (3)	2.61-3.40	3.01	3
Agree (4)	3.41-4.20	3.81	4
Strongly Agree (5)	4.21-5.00	4.60	5

The Likert scale consists of five (5) options that represents the rating that indicates their level of agreement. Each question is interpreted using a five-point scale with an interval of 0.79 each category: "Strongly disagree" 1.00 - 1.80, "Disagree" 1.81 - 2.60, "Undecided" 2.61 - 3.40, "Agree" 3.41 - 4.20, and "Strongly Agree" 4.21 - 5.00. Each Likert description has an assigned value that represents their weight, with 1 as the lowest and 5 as the highest.

D. Data Gathering

As the questionnaire had been approved by the professor, the researchers started to distribute the survey among the second-year Medical Biology students at the school year 2023 to 2024 in Far Eastern University, located in Sampaloc, Manila. The survey was conducted online by utilizing the Messenger app as the researchers' platform for distribution. Before giving the survey to the students, they were asked if they were willing

to answer a short interview, whether or not they drink coffee as the needed participants are students who drink coffee to aid their academic learning. For the students who answered that they drink coffee, the survey link was sent to them. Once the respondents begin to answer, their personal information is kept in strict confidentiality and used solely for the necessary purposes as part of the integrity of this research. After all of the respondents answered the survey, the researchers tallied the data as the basis for interpretation.

E. Data Analysis

The researchers use descriptive analysis as the initial step in comprehensively understanding the dataset, allowing researchers to summarize and interpret key characteristics and trends present within the data. Through techniques such as measures of central tendency, dispersion, and graphical representation, researchers gained valuable insights into the distribution and variability of variables, thus laying the groundwork for more advanced statistical analyses. Moreover, descriptive analysis facilitated the identification of deviations that could influence subsequent analyses, ensuring the reliability and validity of the research findings. By providing a systematic and organized presentation of the data, descriptive analysis not only enhanced the researchers' understanding but also facilitated communication of findings and fostering transparency in the research process and outcomes. Additionally, the findings from descriptive analysis helped choose the right statistical methods and shape the research questions, guiding the next steps and adding new knowledge to the field.

F. Statistics

The weighted mean calculation enabled the researchers to not only quantify the average perception but also account for the varying degrees of importance assigned to each Likert scale option by respondents. By assigning midpoint values and weights, the analysis captured the aspects in perception and to clarify the significant role of coffee as a learning aid. This comprehensive approach offers a complex understanding of how students perceive the impact of coffee consumption on their academic performance, potentially informing educational strategies and policies aimed at optimizing student learning experiences. Additionally, it shows why it's important to consider different perspectives in academic research because many things affect how students behave and perform in different ways.

III. RESULTS

A. Demographics

How many coffee beverages do you drink a day?

TABLE 2.1. Number of coffee beverages intake per day.

Variable	Frequency	Percentage
A. 1-2 cups	31	94
B. 3-5 cups	2	6
C. 6 cups and above	0	0
Total	33	100

Table 2.1 depicts the daily coffee consumption of the respondents, wherein, 31 respondents choose 1 to 2 cups per day with a frequency value of 94% to the total number of respondents. There are also 2 numbers of respondents who answered that they drink 3 to 5 cups of coffee beverages per day, which is 6% to the total number of respondents.

I drink the most coffee during this time of the day.

TABLE 2.2. Coffee consumption peaks among respondents during periods of the day.

Variable	Frequency	Percentage
A. Morning	7	21.2
B. Afternoon	10	30.3
C. Evening	9	27.3
D. Night	7	21.2
Total	33	100

Table 2.2 reveals the time of the day where students drink the most. It was found that during the afternoon the majority of students consume more coffee beverages, with a total of 10 respondents and 30.3% of the total respondents. Following this, is during evening with 9 respondents, while both morning and night have equal number of respondents which values to 7.

TABLE 2.3. The students' coffee consumption throughout the semester.

Statement	Weighted mean	Visual interpretation
1. I drink the most coffee during the beginning of the semester.	3.06	Undecided
2. I drink the most coffee during midterms.	4.45	Strongly Agree
3. I drink the most coffee during finals.	4.48	Strongly Agree

The table above presents the majority of the respondents' coffee consumption throughout the semester. From the data, the students have shown that they are "Undecided" when it comes to drinking coffee at the beginning of the semester with a weighted mean of 3.06. For the second statement, the students "Strongly Agree" that they drink most coffee during midterms with a weighted mean of 4.45, while the third statement was also interpreted as "Strongly Agree" wherein students mostly drink coffee during finals with a weighted mean of 4.48.

B. Reasons

TABLE 2.4. Reasons for coffee consumption.

Statement	Weighted mean	Visual interpretation
1. I need coffee to get me through my day.	3.09	Undecided
2. I struggle more in school when I do not drink coffee.	2.67	Undecided
3. I often drink coffee when doing homework.	3.76	Agree
4. I drink more coffee when I have a lot of schoolwork due.	4.18	Strongly Agree
5. I often procrastinate when it comes to schoolwork when I do not drink coffee.	2.30	Disagree
6. I often do not have enough energy to complete my schoolwork when I do not drink coffee.	2.79	Undecided

Table 2.4 shows the result of the reasons for the second-year

Medical Biology students' coffee consumption. The students were "Undecided" if they needed coffee to get them through the day, if they struggled more in school, if they did not drink coffee, and if they did not have enough energy to complete schoolwork. While most agreed that they often drink coffee when doing homework and if they have a lot of schoolwork due. The respondents also disagreed that they often procrastinate when they do not drink coffee.

Statements one (1), two (2), and six (6) are interpreted as "Undecided", while statements three (3) and four (4) are interpreted as "Agree". Statement three (3) got the highest ranking with weighted mean 4.18 interpreted as "Agree", while statement five (5) got the lowest ranking with a weighted mean of 2.30. This suggests that the students' main reason for drinking coffee is when they have a lot of schoolwork due.

C. Perception

TABLE 2.5. The perception of students to the effects of coffee.

Statement	Weighted mean	Visual interpretation
1. I feel that coffee helps me with sustained energy.	3.84	Agree
2. I feel that coffee helps me with having a better mood.	3.54	Agree
3. I feel that there's no difference in my energy and mood when I drink coffee.	2.63	Undecided
4. I feel I could accurately accomplish schoolwork without coffee.	3.45	Agree
5. I don't think I could do well in school without consuming coffee.	2.45	Disagree
6. I often do not have enough energy to complete my schoolwork when I do not drink coffee.	2.78	Undecided

The table above discusses students' perceptions of how coffee affects their energy levels, mood, and academic performance. A majority agrees that coffee enhances sustained energy and improves mood, with average scores of 3.84 and 3.54. There is a lack of consensus on coffee having no effect, with an average score of 2.63 indicating uncertainty. Participants generally believe they can perform schoolwork effectively without coffee, evidenced by an average score of 3.45. However, there is disagreement regarding the necessity of coffee for academic success, indicated by a lower score of 2.45. And lastly, a score of 2.78 suggests slight indecision about coffee's role in providing enough energy for completing schoolwork.

IV. DISCUSSIONS

In Table 2.1 it indicates the number of cups of coffee beverages the students drink per day, wherein the the data shows that the number of coffee beverages that students drink per day is in line to the recommendation of Food and Drug Administration which states that the maximum recommended intake of caffeine is 400 milligrams a day or around four (4) to five (5) cups with no negative association to its effects (Weatherspoon & Morales, 2023). In the event that a person consumes coffee beverages beyond the recommendation that person may experience disrupted sleep or even upset stomach

or heartburn (Weatherspoon & Morales, 2023). Table 2.2 reveals the period of the day when respondents consume more coffee, the result of this expresses that the respondents tend to drink more during the afternoon. This perhaps is the time where students tend to feel more sluggish and consuming coffee can aid in delaying fatigue and increase energy and muscle strength (Olsen & VanDeWalle, 2020).

In Table 2.3, the data illustrates that students are "undecided" regarding coffee consumption at the beginning of the semester. This is due to the relatively light workload during this initial period. Possible explanations include the adjustment period provided by the university, during which professors may refrain from immediately starting lessons or assigning extensive tasks across all subjects. With this, students do not have any reason to resort to all-night study sessions at the beginning of the semester (Marashli, 2021). However, during the middle and final period of the semester, most students have "strongly agreed" that their intake of coffee increased. As examinations occur mostly during the middle and final period, Medical Biology students have the tendency to use coffee as a stimulant towards the brain against fatigue, as well as enhancing their academic performance (Van Beek et al., 2019).

Based on the results on Table 2.4, statement three (3) got the highest rank which means that most of the respondents agreed that the main reason they drink coffee is when they have a lot of schoolwork that needs to be done. This implies that students depend on coffee as an aid to efficiently handle their academic workload. Furthermore, the majority of the students also agreed on consuming coffee while engaging in homework tasks as suggested by statement four (4). In a study conducted by Mahoney et al. (2019), the primary reason behind coffee consumption that contains caffeine was found to be to maintain wakefulness. This parallels the findings from Table 2.4, where it is evident that students mostly consume coffee to sustain alertness in their pursuit to accomplish pending schoolworks.

Table 2.5 illustrates students' perspectives regarding the influence of coffee on their energy levels, mood, and academic tasks. The majority of students believe that coffee provides them with sustained energy and enhances their mood, indicating a generally positive perception. However, there is a segment of students who are uncertain about the impact of coffee, suggesting a lack of consensus. While many students feel capable of managing their schoolwork without relying on coffee, there exists a disagreement regarding the necessity of coffee for achieving academic success. Additionally, some students express indecision about whether coffee sufficiently fuels their energy for completing school tasks. In a study conducted by (Sarno & Sarno, 2022), coffee increases energy, sharpens focus, and sharpens cognitive abilities, all of which can greatly improve academic achievement.

V. CONCLUSION AND RECOMMENDATIONS

The analysis conducted by the researchers entitled "The Perception of Second-Year Medical Biology Students on Their Coffee Consumption as Aid for Their Learning", various key conclusions can be drawn with regards to the demographic profile of the respondents, the main reasons for students' coffee consumption, and the effects of coffee as a learning aid as

perceived by the students.

To conclude, this research paper has determined the demographic profile of those who consumed coffee among the second year Medical Biology students. The researchers also learned the main reasons for their coffee consumption as well as the effects of coffee as a learning aid from the students.

Findings of this study revealed that there is a diverse range regarding the characteristics of coffee consumers. It unveils that the majority of the coffee consumers in second-year Medical Biology students are moderate drinkers, with preference towards afternoon coffee intake. The students also show low coffee consumption during the beginning of the semester but have higher consumption during midterms and finals, which suggests that there is an association of coffee consumption to academic stressors. The study also discovered the focal reason for the coffee consumption of the respondents is using coffee as an enhancing tool for focus, productivity, and academic demands. There is a positive association of students to coffee consumption on school performance, as it gives the respondents energy to finish the tasks. However, it is noteworthy that the students were hesitant whether coffee instigated their academic success, on account of students perceiving that they can effectively perform well in school without coffee, but the students still acknowledge the benefits brought by coffee.

While the study offers significant insights to the perception of the second-year Medical Biology students as regards to their coffee consumption, this study acknowledges several limitations. The sample size of the study may be limited, as the diversification of the demographics is insufficient, which affects the generalization for the entire population. Apart from this, the focus of the study limits the comprehensiveness of the analysis as it centers on the effects of coffee only on energy levels, perception of academic performance, and mood. Recognizing these limitations is significant for accurate interpretation of results as well as proposing recommendations for future research in addressing the limits of the study. Based on the outcomes of the study, the researchers recommend having a wider number of respondents for better diversification and generalization. Future researchers may explore additional factors that drive students of their coffee consumption, such as social norms and cultural influences. It is ideal for healthcare professionals to promote and inform students about responsible coffee consumption habits and supervise academic stress. Through this recommendation future researchers can contribute more for a better comprehension and analysis to students' coffee consumption habits.

REFERENCES

[1] Alfawaz, H., Khan, N., Yakout, S. M., Khattak, M. N. K., Alsaikhan, A. A., Almousa, A. A., Alsuwailem, T. A., Almjlad, T. M., Alamri, N., Alshammari, S., & Al-Daghri, N. M. (2020). Prevalence, Predictors, and Awareness of Coffee Consumption and Its Trend among Saudi Female Students. *International Journal of Environmental Research and Public Health, 17*(19), 7020. https://doi.org/10.3390/ijerph17197020

[2] Al Matalka, M., & Al Dwakat, M. (2022). The Academic Performance Challenges of Students in terms of Obtaining the Cumulative average Required from Donors to Continuing Study. *Journal of Positive School Psychology, 6*(8), 8494–8502. https://journalppw.com/index.php/jpsp/article/view/11335/7318

[3] Alsharif, S., Al-Qathmi, M. S., Baabdullah, W. M., Alhrkan, T. A., Fayoumi, Y. A., Alhejaili, F., & Wali, S. O. (2018). The effect of caffeinated beverages on sleep quality in college students. *Saudi Journal of Internal Medicine, 8*(1), 43–48. https://doi.org/10.32790/sjim.2018.8.1.6

[4] Awadalla, S., Davies, E. B., & Glazebrook, C. (2020). A longitudinal cohort study to explore the relationship between depression, anxiety and academic performance among Emirati university students. *BMC Psychiatry, 20*(1). https://doi.org/10.1186/s12888-020-02854-z

[5] Bay Atlantic University. (n.d.). *8 Types of Learning Styles | The Definitive Guide*. Bay Atlantic University. https://bau.edu/blog/types-of-learning-styles/

[6] Bertasi, R.A.O., Humeda, Y., Bertasi, T. G., Zins, Z., Kimsey, J., & Pujalte, G. G. (2021). *Caffeine intake and mental health in college students*. Cureus. https://doi.org/10.7759/cureus.14313

[7] Bindbeutel, M. (2016). *Correlation between a students' academic performance and caffeine intake*. Digital Commons@Lindenwood University. https://digitalcommons.lindenwood.edu/psych_journals/vol1/iss18/6/

[8] Mahoney, C. R., Giles, G. E., Marriott, B. P., Judelson, D. A., Glickman, E. L., Geiselman, P. J., & Lieberman, H. R. (2019). Intake of caffeine from all sources and reasons for use by college students. *Clinical Nutrition, 38*(2), 668–675. https://doi.org/10.1016/j.clnu.2018.04.004

[9] Marashli, L.T. (2021, December). *The Difference In Caffeine Consumption Among College Students At The Beginning And End Of The Semester*. OhioLINK ETD. https://etd.ohiolink.edu/acprod/odb_etd/ws/send_file/send?accession=kent1637005805917981&disposition=inline

[10] National Coffee Association. (2020). *National Coffee Drinking Trends*. National Coffee Association. https://www.ncausa.org/Industry-Resources/Market-Research/NCDT

[11] Nyutu, E. N., Cobern, W. W., & Pleasants, B. (2020). Correlational Study of Student Perceptions of their Undergraduate Laboratory Environment with respect to Gender and Major. *International Journal of Education in Mathematics, Science and Technology, 9*(1), 83–102. https://doi.org/10.46328/ijemst.1182

[12] Olsen, N., & VanDeWalle, G. (2020, May 15). *When Is the Best Time to Drink Coffee?* Healthline. https://www.healthline.com/nutrition/best-time-to-drink-coffee#bottom-line

[13] Parry, D., Iqbal, S., Harrap, I., Oeppen, R., & Brennan, P. (2023). Caffeine: benefits and drawbacks for technical performance. *British Journal of Oral & Maxillofacial Surgery, 61*(3), 198–201. https://doi.org/10.1016/j.bjoms.2023.01.007

[14] Riera-Sampol, A., Rodas, L., Martí-Nez, S. G., Moir, H., & Tauler, P. (2022). Caffeine Intake among Undergraduate Students: Sex Differences, Sources, Motivations, and Associations with Smoking Status and Self-Reported Sleep Quality. *Nutrients, 14*(8), 1661. https://doi.org/10.3390/nu14081661

[15] Sarno, J. & Sarno, J.M. (2022, June 30). *Caffeine consumption and its effects towards young adults' short-term memory recall*. International Journal of New Economics and Social Sciences. https://ijoness.com/api/files/view/1969035.pdfcoffee

[16] UNESCO. (n.d.). *Teaching aid - IIEP Policy Toolbox*. IIEP Policy Toolbox. https://policytoolbox.iiep.unesco.org/glossary/teaching-aid/

[17] Van Beek, A.R., Weier, M.E., Williams, K., & Abraham, S.P. (2019, May). *College Students' Caffeine Intake Habits and Their Perception of Its Effects*. Research Gate. https://www.researchgate.net/publication/334368784_College_Students'_Caffeine_Intake_Habits_and_Their_Perception_of_Its_Effects

[18] Weatherspoon, D., & Morales, P. (2023). *Caffeine: Benefits, risks, and effects*. Medical News Today. https://www.medicalnewstoday.com/articles/285194#sources

[19] Wikoff, D., Welsh, B. T., Henderson, R., Brorby, G. P., Britt, J., Myers, E., & Goldberger, J. (2017). *Systematic review of the potential adverse effects of caffeine consumption*. Science Direct. https://www.sciencedirect.com/science/article/pii/S0278691517301709?via%3Dihub