International Journal for Multidisciplinary Research (IJFMR)
E-ISSN: 2582-2160 ● Website: www.ijfmr.com ● Email: editor@ijfmr.com

Caffeine Motives and its effects of High Anxiety Sensitivity on Individuals

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Abstract

This study investigates the relationship between motives of caffeine consumption, stress and anxiety among individuals in age ranging from 18 – 40 years. The study was done with a sample size of 100 individuals and the data was collected using an online google survey and the responses were recorded. Quantitative analysis was done and then these were graded according to Anxiety sensitivity index (ASI). Anxiety and caffeine are reported to have an association (p = 0.656). In this study it was found that individuals consume caffeine for habit, pleasure, social interaction, to enhance productivity and to wake up. Also, caffeine relation with respect to anxiety was made using anxiety sensitivity and positive correlation was found for the same but as such no significant main effect of anxiety and caffeine consumption was made.

Keywords: Caffeine, Anxiety Sensitivity

Introduction

Anxiety sensitivity refers to the fear of anxiety-related symptoms due to the belief that these symptoms have harmful consequences. Caffeine, a widely consumed psychoactive substance, is known to exacerbate anxiety symptoms in some individuals. Caffeine doses higher than 200mg can cause anxiety, upset stomach, alertness, increased energy, urinary incontinence, increased blood pressure, cortisol secretion and increased physiological arousal. This research aims to investigate the impact of caffeine consumption on individuals with high anxiety sensitivity.

Caffeine is the most widely used psychoactive substance around the world (Nehlig, 1999) and can be found in a variety of products, including coffee, tea, chocolate, soft drinks, and some over-the-counter medications (Ries et al., 2009). While not every individual experience negative effects from caffeine, excessive caffeine consumption has been known to induce negative effects in certain individuals. Caffeine doses higher than 200 mg can cause anxiety, upset stomach, alertness, increased energy, urinary incontinence, increased blood pressure, cortisol secretion, and increased physiological arousal (Childs & de Wit, 2006; Giles et al., 2018; Juliano & Griffiths, 2004; Ries et al., 2009; Smith et al., 2012).

Individuals prone to anxiety might be less likely to consume caffeine, in part because higher doses of caffeine are associated with increased arousal and anxiety (McNally, 1996; Stewart & Kushner, 2001). One underlying risk factor for anxiety disorders is Anxiety

Sensitivity. Horenstein et al. (2018) defined Anxiety Sensitivity (AS) as the fear of the potential consequences of anxiety-related symptoms, including physical (e.g., fear of heart attack), social (e.g., fear of embarrassment), and/or mental incapacitation (e.g., fear of "going insane"). AS is hypothesized to set the foundation for both anxiety disorders and other psychiatric conditions (McNally, 2002). Some

researchers have not found any significant associations between AS and use of stimulants like caffeine (Forsyth et al., 2003; McWilliams & Asmundson, 2001; Saed & Khakpoor, 2020; Stewart et al., 1997). However, other researchers have found that the quantity of stimulants consumed is significantly associated with AS (Zvolensky et al., 2008; Gonzalez et al., 2008; Leyro et al., 2008; Novak et al., 2003).

An individual's expectancies for caffeine consumption may also impact how much caffeine one consumes. Prior researchers have found that an individual's outcome expectancies influence both initiation and continued use of psychoactive substances (Metrik & Rohsenow, 2013). For example, Nikčević et al. (2017) found mixed results including a significant association between cigarette use and a smoking outcome expectancy of negative social impression, nicotine dependence, and negative affect reduction; and no association between anxiety itself and cigarette use. Regarding caffeine expectancies, Kearns et al. (2018) developed the Brief Caffeine Expectancy Questionnaire (B-CaffeEQ) and found that higher agreement that caffeine would result in enhanced physical performance, energy, mood, positive social effects, and appetite suppression was correlated with more frequent caffeine use.

Another important predictor of substance use is the explicit motive one has for using a psychoactive substance. Irons et al. (2014) found caffeine motives related to cognitive enhancement, negative affect relief, positively reinforcing effects, and weight control had a small, significant association with caffeine consumption. In a similar study with adolescents, Ludden and Wolfson (2010) found that individuals who consumed the highest amount of caffeine did so to get through the day, experiment, and have fun.

The amount of psychoactive substance that one consumes may also depend upon the interaction between AS and one's motives for consuming a particular substance. O'Connor et al. (2008) found that participants with high AS were more likely to consume alcohol to reduce emotional distress rather than for the perceived positive effects of alcohol. DeHaas et al. (2001) found that higher AS was significantly associated with substance use for negative situations (i.e., in response to negative emotions) for participants who were dually diagnosed with a mood disorder and substance use disorder. Furthermore, DeHaas et al. (2001) did not find a significant association between AS and positive situation substance use, increased positive emotions, or increased satisfaction in social relationships. In another study, Novak et al. (2003) found that low AS individuals were more likely to smoke more cigarettes if they also endorsed cigarette use motives like indulgent or sedative effects. Similarly, Watt et al. (2006) found that participants with high AS reported consuming alcohol for motives related to coping and conformity. These mixed findings suggest that the relationship between AS and one's explicit motives for substance use may depend upon the substance in question.

Research Question:

What are the motives for consumption of caffeine and its effects with high anxiety sensitivity on individuals?

Objectives:

- To screen individuals for high anxiety sensitivity
- To determine the relationship between caffeine consumption and anxiety sensitivity symptoms on individuals.
- To explore potential moderating factors that influence the relationship between caffeine and anxiety sensitivity.
- To provide insights into the management of caffeine intake for individuals with high anxiety sensitivity

Hypotheses:
H1: There will be a significant relationship between caffeine consumption and anxiety symptoms
H2: No significant relationship between caffeine consumption and anxiety symptoms

Methodology
Participants: The study will recruit individuals aged 18-25 (later adolescents and early adults) and 26-40 (adults) who consume caffeine on a daily basis and to understand its effects on them.
A descriptive research design will be adopted for the present study, where primary data will be collected using specific standardized questionnaires.
Assessment: Anxiety sensitivity and anxiety symptoms will be assessed using validated questionnaires.
Data Analysis: Quantitative data analysis will include descriptive statistics, inferential tests (e.g., t-tests, ANOVA), and regression analysis to examine the relationship between caffeine consumption and anxiety sensitivity, controlling for potential confounders.

Sample:
For the present study, a sample consisting of 100 young adults living in the rural area of. The purposive, criterion and snowball sampling technique will be used for the collection of data from the sample.

Inclusion Criteria of the Participants:
- Both male and female will be considered in the study
- Participants who consume caffeine will be considered
- Participants within the age group of (18-40) will be taken
- Participants who do not have any major physical/psychiatric illness
- Participants who will give their consent for participation.

Exclusion Criteria of the Participants:
- People who do not consume caffeine were not included in the study.
- Individuals below the age of 18 and above the age of 40 years were not considered.
- People who are on anti-anxiety medications were not included.

Ethical Considerations:
The study will adhere to ethical guidelines, ensuring informed consent, confidentiality, and the well-being of participants. Ethical approval will be obtained from the relevant institutional review board.

Measures:
The following standardized instruments to be utilized during the investigation:
Socio-demographic Datasheet (Self, 2023)
The socio-demographic datasheet will consist of the personal record of the participants like name, age, sex, community, religion, ethnicity, family income, educational qualifications etc.

Anxiety sensitivity index-third edition (ASI-3)
This questionnaire asks respondents to rate each of 18 items using a 6-point scale with anchors ranging from 1 (Very Little) to 6 (Very Much) and yields three subscale scores: Social (e.g., “It scares me when I

blush in front of people.'), Physical (e.g., "It scares me when my heart beats rapidly,'), and Cognitive (e.g., "It scares me when I am unable to keep my mind on a task.'). Prior studies have supported the convergent, discriminant, and criterion-related validity of the ASI-3 (Taylor et al., 2007). In this study, these subscales demonstrated good to high internal consistency reliability: Social (a=0.86), Physical (a=0.93), and Cognitive (a =0.94).

Motives for Caffeine Consumption Questionnaire (MCCQ)

This 23-item questionnaire measures reasons for consuming caffeine (Agoston et al., 2018). It uses a five-point frequency scale ranging from 1 (Never/Almost Never) to 5 (Almost every time/always). Agoston et al. (2018) found evidence of six subscales: Habit, a=0.81 ("…because it is an enjoyable habit"), Alertness, a=0.95 ("…because it helps me stay awake"), Mood, a=0.86 ("…because it improves my mood"), Social, (a=0.91 ("…because everyone in my company drinks it"), Taste, a=0.91 (…because I like its taste"), and Symptom Management, a=0.66 ("…because it reduces headaches"). We found acceptable to high internal consistency reliability on the following subscales: Alertness (a=0.90), Mood (a=0.79), Social (a=0.92), Taste (a=0.78), and Symptom Management (a=0.70). Internal consistency reliability was unacceptably low for the Habit subscale (a=0.55).

Statistical Techniques:

The quantization data will be analyzed by using statistical package for social science (SPSS). Descriptive statistics like percentage mean and standard deviation will also be used. Inferential statistics will also be calculated by using, t-test, Spearman's correlation.

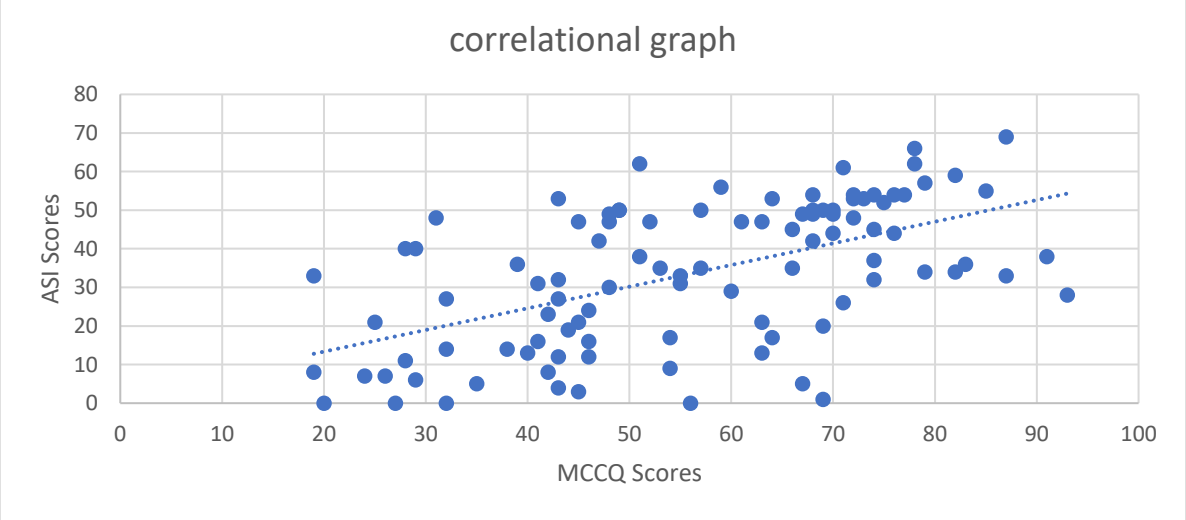
Methods of data collection:

The data was collected virtually by sending google survey forms to the sample and the tools used were electronic devices and the internet.

Result and Discussion

A sample size of 100 was selected to understand the if there is any relationship between the effects of caffeine on anxiety sensitivity of individuals. A survey was conducted using Google Forms, and these were the results -

Correlational Analysis Graph – Scatterplot



This graph is a scatterplot titled "Correlational Analysis Graph." It shows the relationship between two variables: "MCCQ Scores" on the x-axis and "ASI Scores" on the y-axis. Each blue dot represents a data point corresponding to an individual score pair of MCCQ and ASI.
The plot also includes a trend line (dotted line) indicating a positive correlation between the MCCQ scores and ASI scores. This means that as the MCCQ scores increase, the ASI scores tend to increase as well.
- The distribution of data points suggests a moderate positive correlation, as evidenced by the upward-sloping trend line.

Correlations				
			MCCQ	ASI
Spearman's rho	MCCQ	Correlation Coefficient	1.000	.577**
		Sig. (2-tailed)	.	.000
		N	100	100
	ASI	Correlation Coefficient	.577**	1.000
		Sig. (2-tailed)	.000	.
		N	100	100
**. Correlation is significant at the 0.01 level (2-tailed).				

Hypothesis test for the motives of caffeine consumption and its effect of high anxiety sensitivity on individuals

This table displays the results of a Spearman's rank-order correlation between two variables, Caffeine and Anxiety Sensitivity.

1. Variables:

Caffeine measured using MCCQ – Independent Variable
Anxiety Sensitivity measured using ASI – Dependent Variable

2. Correlation Coefficient:

The correlation coefficient between MCCQ and ASI is (0.577).
This indicates a moderate positive correlation between MCCQ and ASI.

3. Significance (Sig. 2-tailed):

The p-value associated with this correlation is (0.000).
Since this value is less than (0.01), the correlation is statistically significant at the (0.01) level.

4. Sample Size (N):

The sample size for both MCCQ and ASI is (100).

5. Significance Notation:

The table notes that correlations marked with (**) are significant at the (0.01) level (2-tailed).

Overall, the table indicates a significant positive correlation between MCCQ and ASI with a correlation coefficient of (0.577).

Discussion

The purpose of the study was to find the motives about why individuals consume caffeine and how highly does it affect the anxiety sensitivity of an individual.

The sample size for this study was 100 including both male and female. The age norm for this study was between 18 to 40 years of age. The inclusion criteria involved that they consume caffeine.
Data was collected using Google survey forms and the responses were recorded. The data was then scored and the results were interpreted. The sampling method used was purposive, criterion and snowball sampling.
The scatterplot graph for the results defined that the data was not normally distributed.
Hence, in SPSS, non-parametric test of Spearman's correlation was used to understand the relationship between caffeine and anxiety sensitivity.
There was the positive correlation between the two variables with the correlation coefficient of (0.577) hence proving the hypothesis right that there is a significant relationship between caffeine consumption and anxiety symptoms.

Summary And Conclusion

The purpose of this study was to investigate the motives behind caffeine consumption and its impact on anxiety sensitivity. A sample of 100 individuals, both male and female, aged 18 to 40, who consume caffeine, was selected using purposive, criterion, and snowball sampling methods. Data was collected via Google survey forms and analysed using non-parametric Spearman's correlation in SPSS due to the non-normal distribution of data. Results showed a significant positive correlation (0.577) between caffeine consumption and anxiety sensitivity, supporting the hypothesis that caffeine intake is associated with increased anxiety symptoms.
Key findings include that 51.5% of participants were male, and the majority of respondents were young adults aged 20-24. A substantial 44.6% of individuals consume caffeine habitually as part of their routine, and 51.5% use it to combat tiredness. Additionally, 62.3% consume caffeine for its taste, and 33.7% believe it aids concentration. Despite this, 56.5% feel caffeine does not alleviate headaches, and 55.5% experience mood improvement post-consumption. Social and psychological effects of caffeine were also noted, with 48.5% using it to stay awake and 62.4% to avoid appearing nervous in social situations. Anxiety sensitivity was prevalent, with 45.6% reporting apprehension when unable to concentrate and 76.2% experiencing anxiety with chest pain.
In conclusion, this study reveals a significant positive correlation between caffeine consumption and anxiety sensitivity. The findings suggest that while caffeine is widely used for its taste, energy-boosting properties, and social benefits, it also contributes to increased anxiety sensitivity in many individuals. This highlights the need for awareness regarding caffeine's psychological impacts and suggests to manage its consumption to mitigate anxiety-related effects.

References

1. Adcock, S., & Lang, B. (2023). Caffeine Motives and Expectancies for Individuals with High Anxiety Sensitivity. Substance Use & Misuse, 58(5), 610–617.
2. https://doi.org/10.1080/10826084.2023.2177959
3. Ágoston, C., Urbán, R., Király, O., Griffiths, M. D., Rogers, P. J., & Demetrovics, Z. (2018).
4. Why do you drink caffeine? The development of the Motives for Caffeine Consumption Questionnaire (MCCQ) and its relationship with gender, age and the types of caffeinated beverages. International Journal of Mental Health and Addiction, 16(4), 981-999. https://doi.org/10.1007/s11469-017-9822-3 Allan, N. P., Cooper, D., Oglesby, M. E., Short, N. A., Saulnier, K. G., & Schmidt, N. B. (2018).

Lower-order anxiety sensitivity and intolerance of uncertainty dimensions operate as specific vulnerabilities for social anxiety and depression within a hierarchical model. Journal of Anxiety Disorders, 53,

5. 91-99. https://doi.org/10.1016/j. janxdis.2017.08.002
6. Allan, N. P., Raines, A. M., Capron, D. W., Norr, A. M., Zvolensky, M. J., & Schmidt, N. B. (2014). Identification of anxiety sensitivity classes and clinical cut-scores in a sample of adult smokers: Results from a factor mixture model. Journal of Anxiety Disorders, 28(7), 696-703. https://doi.org/10.1016/j.janxdis.2014.07.006 Benke, C., Blumenthal, T. D., Modeß, C., Hamm, A. O., & Pané-Farré, C. A. (2015). Effects of anxiety sensitivity and expectations on the modulation of the startle eyeblink response during a caffeine challenge. Psychopharmacology, 232(18), 3403-3416. https://doi. org/10.1007/s00213015-3996-9
7. Borges, A. M., Lejuez, C. W., & Felton, J. W. (2018). Positive alcohol use expectancies moderate the association between anxiety sensitivity and alcohol use across adolescence. Drug and Alcohol Dependence, 187, 179-184. https://doi.org/10.1016/j.drugalc- dep.2018.02.029
8. Childs, E., & de Wit, H. (2006). Subjective, behavioral, and physio- logical effects of acute caffeine in light, nondependent caffeine users. Psychopharmacology, 185(4), 514-523. https://doi.org/10.1007/ s00213-006-0341-3
9. DeHaas, R., Calamari, J. E., Bair, J. P., & Martin, E. D. (2001). Anxiety sensitivity and drug or alcohol use in individuals with anxiety and substance use disorders. Addictive Behaviors, 26(6), 787–801. https:// doi.org/10.1016/S0306-4603(01)00237-4
10. Forsyth, J. P., Parker, J. D., & Finlay, C. G. (2003). Anxiety sensitivity, controllability, and experiential avoidance and their relation to drug of choice and addiction severity in a residential sample of substance-abusing veterans. Addictive Behaviors, 28(5), 851-870. https://doi.org/10.1016/S0306-4603(02)00216-2
11. Giles, G. E., Spring, A. M., Urry, H. L., Moran, J. M., Mahoney, C. R., & Kanarek, R. B. (2018). Caffeine alters emotion and emotion- al responses in low habitual caffeine consumers. Canadian Journal of Physiology and Pharmacology, 96(2), 191-199. https://doi. org/10.1139/cjpp-2017-0224
12. Gonzalez, A., Zvolensky, M. J., Vujanovic, A. A., Leyro, T. M., & Marshall, E. C. (2008). An evaluation of anxiety sensitivity, emotional dysregulation, and negative affectivity among daily cigarette smokers: Relation to smoking motives and barriers to quitting. Journal of Psychiatric Research, 43(2), 138–147. Horenstein, A., Potter, C. M., & Heimberg, R. G. (2018). How does anxiety sensitivity increase risk of chronic medical conditions? Clinical Psychology: Science and Practice, 25(3), e12248. https://doi.
13. org/10.1111/cpsp.12248
14. Landrum, R. E. (1992). College students' use of caffeine and its relationship to personality.
15. College Student Journal, 26(2), 151–155. Lauriola, M., Carleton, R. N., Tempesta, D., Calanna, P., Socci, V., Mosca, O., Salfi, F., De, Gennaro, L., & Ferrara, M. (2019). A correlational analysis of the relationships among intolerance of uncertainty, anxiety sensitivity, subjective sleep quality, and insomnia symptoms. International Journal of Environmental Research and Public Health, 16(18), 3253.
16. https://doi.org/10.3390/ijerph16183253 Leyro, T. M., Zvolensky, M. J., Vujanovic, A. A., & Bernstein, A. (2008). Anxiety sensitivity and smoking motives and outcome expectancies among Adult Daily Smokers: Replication and extension. Nicotine &

17. Tobacco Research: Official Journal of the Society for Research on Nicotine and
18. Tobacco, 10(6), 985-994. https://doi. org/10.1080/14622200802097555
19. Ludden, B. A., & Wolfson, A. R. (2010). Understanding adolescent caffeine use: Connecting use patterns with expectancies, reasons, and sleep. Health Education & Behavior: The Official Publication of the Society for Public Health Education, 37(3), 330–342. https:// doi.org/10.1177/1090198109341783
20. McNally, R. J. (1996). Anxiety sensitivity is distinguishable from trait anxiety. In: R. M. Rapee (Ed.), Current controversies in the anxiety disorders (pp. 214–227). The Guilford Press.
21. McNally, R. J. (2002). Anxiety sensitivity and panic disorder. Biological Psychiatry, 52(10),
22. 938-946. https://doi.org/10.1016/ S0006-3223(02)01475-0
23. McWilliams, L. A., & Asmundson, G. J. (2001). Is there a negative association between anxiety sensitivity and arousal-increasing sub- stances and activities? Journal of Anxiety Disorders, 15(3), 161–170. https://doi.org/10.1016/s0887-6185(01)00056-1
24. Metrik, J., & Rohsenow, D. J. (2013). Understanding the role of sub- stance expectancies in addiction. In J. MacKillop & H. de Wit (Eds.), The Wiley-Blackwell handbook of addiction psychopharmacology (pp. 459-487). Wiley Blackwell. https://doi. org/10.1002/9781118384404.ch17
25. Moore, P. J., Chung, E., Peterson, R. A., Katzman, M. A., & Vermani, M. (2009). Information integration and emotion: How do anxiety sensitivity and expectancy combine to determine social anxiety? Cognition Emotion, 23(1), 42-68. https://doi.org/10.1080/02699930802214551
26. Nikčević, A. V., Alma, L., Marino, C., Kolubinski, D., Yılmaz-Samancı, A. E., Caselli, G., & Spada, M. M. (2017). Modelling the contribution of negative affect, outcome expectancies and metacognitions to cigarette use and nicotine dependence. Addictive Behaviors, 74, 82-89. https://doi.org/10.1016/j.addbeh.2017.06.002
27. Novak, A., Burgess, E. S., Clark, M., Zvolensky, M. J., & Brown, R. A. (2003). Anxiety sensitivity, self-reported motives for alcohol and nicotine use, and level of consumption.
28. Journal of Anxiety Disorders, 17(2), 165-180. https://doi.org/10.1016/s0887-
29. 6185(02)00175-5
30. T., & Hamm, A. O. (2015). Anxiety sensitivity and expectation of arousal differentially affect the respiratory response to caffeine. Psychopharmacology, 232(11), 1931-1939.
31. https://doi.org/10.1007/ s00213-014-3828-3
32. Ries, R. K., Graham, A. W., Schultz, T. K., Mayo-Smith, M. F., & Wilford, B. (2009). Principles of addiction medicine (4th ed.). American Society of Addiction Medicine (ASAM).
33. Stewart, S. H., Karp, J., Pihl, R. O., & Peterson, R. A. (1997). Anxiety sensitivity and self- reported reasons for drug use. Journal of Substance Abuse, 9, 223-240. https://doi.org/10.1016/s0899-3289(97)90018-3
34. Taylor, S., Zvolensky, M. J., Cox, B. J., Deacon, B., Heimberg, R. G., Ledley, D. R.,
35. Abramowitz, J. S., Holaway, R. M., Sandin, B., Stewart, S. H., Coles, M., Eng, W., Daly, E. S., Arrindell, W. A., Bouvard, M., & Cardenas, S. J. (2007). Robust dimensions of anxiety sensitivity: Development and initial validation of the Anxiety Sensitivity
36. Index-3. Psychological Assessment, 19(2), 176–188. https://doi. org/10.1037/10403590.19.2.176