



Caffeine Use and Its Association with Perceived Stress among Young Adults

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Abstract : The present study explores how perceived stress is associated with caffeine consumption among young adults, while also assessing gender-based variations in both stress levels and caffeine intake. The first objective is to evaluate whether a significant correlation exists between perceived stress and the amount of caffeine consumed. The study further examines whether caffeine use and perceived stress levels differ significantly between males and females. Perceived stress refers to how individuals subjectively interpret and respond to stressful experiences in their daily lives, whereas caffeine use is defined as the intake of caffeinated beverages such as tea, coffee, and energy drinks. A purposive sample of 120 participants, aged between 18 and 25 years and representing both genders, is selected for this research. Data collection is carried out using the Perceived Stress Scale, the Effects of Caffeine Use Scale, and a demographic survey. The results aim to provide insight into the interaction between stress and caffeine use and how gender may influence these factors. This study has the potential to contribute to the fields of behavioural and psychological health and guide future interventions targeting stress and lifestyle habits in young adults.

Keywords: *Caffeine Use, Perceived Stress, Young Adults.*

1. Introduction

Stress is a pervasive phenomenon that has a profound influence on both mental and physical well-being. According to the American Psychological Association, it is described as a mental

or bodily response to internal or external demands, potentially affecting nearly every system in the body. Common physical indicators of stress include rapid heartbeat, excessive perspiration, dry mouth, difficulty breathing, and other symptoms linked to the autonomic nervous system. In addition to these physical effects, stress often manifests through behavioral changes such as agitation, constant movement, and hurried speech. When stress becomes long-term, it may result in emotional fatigue, a sense of being overwhelmed, and heightened susceptibility to numerous physical and psychological illnesses, ultimately reducing an individual's overall quality of life.

From a psychological perspective, stress can be conceptualized in multiple ways—either as an external trigger, an internal reaction, or more holistically, as an ongoing interaction between the individual and their environment. This interaction encompasses elements such as cognitive evaluation, physiological arousal, and behavioural adjustments. Stress is generally experienced when an individual perceives that environmental demands surpass their available coping resources. The sources of stress, known as stressors, may originate internally—such as through personal thoughts or physical sensations—or externally, through pressures like academic workloads or occupational challenges. These stressors differ in their intensity and duration and can lead to varying outcomes. While some stress results in distress, impairing overall functioning, other forms—termed eustress—can be beneficial, fostering resilience, motivation, and personal development.

Several theoretical models have significantly shaped the understanding of stress. One of the earliest and most influential models is Hans Selye's General Adaptation Syndrome (1936), which outlines a three-stage response—alarm, resistance, and exhaustion—that the body undergoes when faced with prolonged stress. Another key theory is Lazarus and Folkman's (1984) Transactional Model of Stress and Coping, which highlights the role of cognitive appraisal and individual perception in how stress is experienced, emphasizing the interaction between the person and their environment as central to understanding stress responses.

Caffeine consumption has garnered considerable interest due to its prevalent use and its psychoactive effects. As a naturally occurring stimulant, caffeine is found in a variety of plant sources, including coffee beans, tea leaves, cocoa pods, kola nuts, and guarana. It is commonly ingested through beverages such as coffee, tea, soft drinks, and energy drinks, as well as through certain pharmaceuticals and dietary supplements. Caffeine acts primarily on the central nervous system, promoting wakefulness, diminishing sensations of fatigue, and enhancing mental performance, especially in tasks that demand sustained attention and concentration.

While moderate caffeine intake is typically considered safe and can even enhance mental alertness and attention, excessive consumption may result in negative effects such as restlessness, increased anxiety, sleep disruptions, and gastrointestinal issues. The body's response to caffeine depends on factors like genetic sensitivity, body weight, habitual use, and the presence of other substances or medications. For some individuals, high caffeine doses can mimic anxiety symptoms or cause mood disturbances, a condition referred to as "caffeinism." Additionally, individuals who regularly consume caffeine may experience withdrawal symptoms, such as headaches, irritability, and fatigue, when they reduce or stop intake, which can contribute to psychological dependence and make it harder for individuals to limit their consumption.

The relationship between caffeine use and psychological stress has become a prominent topic in research, particularly among young adults, who often face academic, social, and personal stressors. For this demographic, caffeine is commonly used as a strategy to cope with stress and increase productivity. However, the impact of caffeine on stress—whether it alleviates or intensifies symptoms—remains unclear. Some studies suggest that caffeine may provide temporary relief from stress by boosting alertness and energy, while others argue that excessive intake, especially in sensitive individuals, can exacerbate stress and anxiety symptoms.

Recent studies point to a multifaceted relationship between caffeine consumption and perceived stress, with individual factors such as gender, personality traits, coping strategies, and environmental influences playing a significant role. Despite a growing body of literature, many questions remain about the precise nature of this relationship and the mechanisms that govern it. Therefore, further research is needed to unravel these complexities and offer more conclusive insights into the connection between caffeine use and stress.

The association between caffeine intake and psychological stress has become an area of growing interest, particularly among young adults who frequently encounter academic, social, and occupational pressures. While caffeine is commonly utilized as a means to cope with stress and improve performance, its potential to exacerbate stress-related symptoms remains inconclusive. Current research highlights a multifaceted and context-dependent relationship between these variables, shaped by both individual differences and environmental influences. To address these complexities, the present study investigates the link between caffeine consumption and perceived stress in young adults, while also assessing potential gender-based differences in both stress experiences and caffeine use.

2. Review of Literature

Singh et al. (2024) conducted a study in India to explore the effects of caffeine consumption on stress management and stamina among university students. Using an online survey, they gathered data from 50 students (62% female, 38% male) aged 20-35 years. The results showed that 38% of the students consumed caffeinated drinks daily, with coffee (46%) and tea (44%) being the most commonly consumed, while energy drinks were less popular (10%). Regarding stress, 34% of students sometimes used caffeine to manage stress, 28% never did, and 48% consumed caffeine during study sessions, work, and exams. The study found that 58% of students experienced changes in stress levels after consuming caffeine, while 42.6% noticed an increase in physical activity. Moreover, 43.5% of participants experienced weight fluctuations linked to caffeine intake, and 34% reported physical effects like increased heart rate. The research concluded that although most students consumed caffeine within the recommended 400 mg limit, intake increased during stressful times, highlighting the need for greater awareness about caffeine's effects and alternative stress management methods. Furthermore, 13.5% of students exceeded the safe daily caffeine intake, raising concerns about potential health risks.

Gusain et al. (2024) examined adolescent awareness of caffeine addiction at a school in Dehradun, India. The study aimed to explore the reasons behind caffeine consumption, as well as students' knowledge and attitudes towards its health effects. Using a quantitative research method with a non-probability sampling technique, the study surveyed 100 adolescents aged 15-18 years. The findings revealed that family dynamics, particularly the type of family structure, influenced awareness of caffeine addiction. The study also showed that adolescents from families with varying levels of parental education exhibited different levels of understanding regarding the risks of caffeine consumption. The research concluded that there was a significant link between the level of awareness of caffeine addiction and the demographic characteristics of the adolescents.

Sayal (2023) explored the relationship between caffeine expectancies and perceived stress in college students aged 18-25. The study examined how caffeine consumption might be linked to expectations of energy enhancement, mood improvement, and physical performance. Results showed that these caffeine-related expectancies were positively correlated. A significant relationship was found between perceived stress and certain caffeine expectancies, such as withdrawal symptoms and sleep disturbances. The study suggested that students with higher stress levels were more likely to develop caffeine dependence and experience sleep issues. The

research recommended that students monitor their caffeine intake to prevent excessive consumption and potential caffeine addiction.

3. Methodology

3.1 Aim

This study aims to explore the relationship between caffeine use and perceived stress among young adults.

3.2 Variables

Independent Variable (IV): Perceived Stress

Perceived stress refers to the level of stress an individual experiences and interprets in their daily life. In this study, it is considered the independent variable because it is expected to influence caffeine consumption.

Dependent Variable (DV): Caffeine Use

Caffeine use refers to the consumption of caffeinated beverages such as coffee, tea, or energy drinks. It is the dependent variable in this study, as its levels may change based on the individual's perceived stress.

3.3 Research Objectives

- a) To explore the relationship between caffeine use and perceived stress among young adults.
- b) To investigate gender differences in patterns of caffeine use and levels of perceived stress among young adults.

3.4 Hypothesis

H1: There will be a significant relationship between perceived stress and caffeine use among young adults.

H2: There will be significant gender differences in caffeine use levels among young adults.

H3: There will be significant gender differences in perceived stress levels among young adults.

3.5 Participants of the Study

The study involves a sample of 120 participants, selected using purposive sampling. The sample includes both male and female participants, primarily within the age range of 18 to 25 years.

3.6 Data Collection Instruments

S. No.	Name of the test	Developed by	Year	Number of Items
1.	Perceived Stress Scale	Sheldon Cohen	1983	10
2.	Effects of Caffeine Use Scale	Annaketurah Ralph	2015	19

3.7 Data Collection Procedure

Data collection will be carried out using two questionnaires: the Perceived Stress Scale and the Effects of Caffeine Use Scale. After an explanation of the study's objectives, participants will be invited to participate and provided with a questionnaire package. This package will contain information about the study, details regarding privacy concerns, the contact information of the researcher, and other relevant materials. A brief 10-minute session will be allocated to explain the instruments used in the study.

Perceived Stress Scale

Description of the Scale: The Perceived Stress Scale (PSS), created by Sheldon Cohen in 1983, is a commonly used psychological tool designed to measure the extent to which individuals perceive their lives as stressful. It assesses how unpredictable, uncontrollable, and overwhelming respondents find their daily lives, capturing the level of stress they feel in their everyday experiences.

The PSS is available in three versions: the 14-item (PSS-14), 10-item (PSS-10), and 4-item (PSS-4) formats. Participants rate each item on a 5-point Likert scale, ranging from "never" to "very often," based on how frequently they have experienced specific thoughts and emotions over the past month. The scale includes both positively and negatively phrased items, with higher scores reflecting greater perceived stress.

Reliability: The PSS has demonstrated strong internal consistency across various populations. Cronbach's alpha coefficients for the PSS-10 have ranged from 0.77 to 0.91, indicating good reliability. Test-retest reliability has also been assessed, with values ranging from 0.68 to 0.86, depending on the specific subscale and time interval between tests.

Validity: The Perceived Stress Scale (PSS) has demonstrated robust construct validity. Evidence of convergent validity is found in the significant correlations between PSS scores and other established measures of psychological distress, such as the Depression Anxiety Stress Scales (DASS-21) and the Generalized Anxiety Disorder 7 (GAD-7) scales. For instance, a study involving Greek adults revealed strong correlations between PSS scores and the DASS-21 subscales for stress ($r = 0.64$), depression ($r = 0.61$), and anxiety ($r = 0.54$).

Furthermore, the PSS has shown predictive validity, as higher scores are linked to a range of negative health outcomes, including elevated cortisol levels, an increased risk of depression, and a higher occurrence of physical symptoms.

Effects Of Caffeine Use Scale

Description of the Scale: The Effects of Caffeine Use Scale (ECUS) developed by Annaketurah Ralph in 2015. It is a 19-item instrument developed to assess the psychological and physiological impacts of caffeine consumption. The scale evaluates aspects such as anxiety, mood changes, and physical symptoms associated with caffeine use. Each item is rated on a Likert scale, reflecting the frequency of experienced effects. The ECUS aims to serve as a screening tool for identifying individuals who may be experiencing negative consequences due to caffeine consumption.

Reliability: The Effects of Caffeine Use Scale (ECUS) has demonstrated a high level of internal consistency, as evidenced by a Cronbach's alpha coefficient of 0.94. This statistic indicates that the items within the scale are highly interrelated, suggesting that they reliably assess the intended constructs associated with caffeine use. Such a high alpha value is indicative of excellent reliability, implying that the scale consistently measures the effects of caffeine consumption across different items. This level of internal consistency supports the ECUS's utility as a dependable instrument for evaluating the impact of caffeine use.

Validity: The construct validity of the ECUS was assessed by examining its correlation with the Depression, Anxiety, and Stress Scales (DASS-21). A significant positive correlation between these instruments indicates that the ECUS successfully reflects elements of negative emotional states linked to caffeine consumption, thereby providing evidence for its concurrent validity.

Statistical Analysis

In the current study, data was analysed using IBM SPSS (Statistical Package for the Social Sciences), a widely utilized software in psychological research known for its capability to perform both descriptive and inferential statistics. Initially, descriptive analyses were conducted to present an overview of the dataset, including central tendencies and variability through means, standard deviations, and frequency distributions. These summaries provided essential insights into participants' patterns of caffeine consumption and levels of perceived stress.

To test the first hypothesis concerning the relationship between caffeine intake and perceived stress among young adults, a Pearson Product-Moment Correlation was employed, as it is well-suited for assessing the strength and direction of associations between two

continuous variables. Additionally, Independent Samples t-tests were utilized to investigate gender-based differences in both caffeine use and perceived stress, addressing the study's second and third hypotheses. These statistical techniques collectively enabled a thorough evaluation of variable interrelations and group distinctions, thereby supporting a robust analysis of the research objectives.

3.8 Result

The present study aimed to investigate the relationship between caffeine consumption and perceived stress in young adults, while also evaluating the influence of gender on these variables. To address these objectives, Pearson's Product-Moment Correlation and Independent Samples t-tests were applied to data obtained from a sample of 120 individuals between the ages of 18 and 25 (*Table 1*). These statistical approaches facilitated the analysis of both the association between stress and caffeine use, and the examination of gender-related differences across the primary variables of interest.

Table 1: *Demographics of respondents (gender)*

Gender	Count of Gender
Female	60
Male	60
Total	120

The first hypothesis proposed a significant association between perceived stress and caffeine intake. To evaluate this, Pearson's correlation analysis was conducted between the total scores on the Perceived Stress Scale (PSS) and the Caffeine Use scores, as shown in *Table 2*. The analysis yielded a significant positive correlation ($r = 0.251$, $p = 0.006$), indicating that individuals reporting higher levels of perceived stress also reported greater caffeine consumption. Given that the p-value is less than .01, the finding is statistically significant at the 0.01 level (two-tailed). These results lend support to the hypothesis and imply that individuals experiencing elevated stress may be more likely to use caffeine as a coping strategy.

Table 2: *Analysis of relationship between caffeine use and perceived stress among young adults.*

Variables	Pearson Correlation (r)	Significance (p)
PSS Score & Caffeine Use	0.251**	0.006

Note: Correlation is significant at the $p < 0.01$ level (2-tailed).

The second hypothesis examined whether there were gender-based differences in caffeine consumption. To assess this, an independent samples t-test was conducted comparing caffeine use scores between male and female participants, as presented in *Table 3*. While females exhibited slightly higher average caffeine use ($M = 60.35$, $SD = 17.64$) compared to males ($M = 55.87$, $SD = 15.55$), the difference was not statistically significant, $t(118) = -1.477$, $p = 0.142$. As the p-value exceeds the 0.05 threshold, the result does not reach statistical significance. These findings suggest that, within the current sample, caffeine consumption did not vary meaningfully between genders in the present sample.

Table 3: Gender differences in caffeine use

Gender	N	Mean	SD	t / p value
Male	60	55.87	15.55	$t(118) = -1.477$
Female	60	60.35	17.64	$p = 0.142$

Note: Difference is not significant at the $p < 0.05$ level (2-tailed).

The third hypothesis focused on potential gender differences in perceived stress levels. To evaluate this, an independent samples t-test was conducted to compare Perceived Stress Scale (PSS) scores between male and female participants, as detailed in *Table 4*. The analysis revealed that females reported significantly higher stress levels ($M = 22.62$, $SD = 6.29$) than males ($M = 19.92$, $SD = 7.23$), with the difference reaching statistical significance, $t(118) = -2.183$, $p = 0.031$. Since the p-value is below the 0.05 threshold, the result is considered statistically significant at the 0.05 level (two-tailed). This supports the hypothesis and suggests that gender differences exist in the experience of stress, with females perceiving more stress than their male counterparts.

Table 4: Gender differences in perceived stress

Gender	N	Mean	SD	t / p value
Male	N/A	19.92	7.23	$t(118) = -2.183$
Female	N/A	22.62	6.29	$p = 0.031$

Note: Difference is significant at the $p < 0.05$ level (2-tailed).

4. Conclusion

The present study examined “Caffeine use and its Association with Perceived Stress among Young Adults”. The findings contribute valuable insights into how stress may shape health-related behaviour’s within this population. The observed positive correlation between

stress levels and caffeine intake suggests that individuals experiencing higher stress may be more inclined to engage in increased stimulant use, which could carry long-term health consequences. Additionally, the identified gender differences in stress emphasize the importance of adopting more tailored approaches in both academic research and clinical practice. Future investigations might consider incorporating moderating factors such as sleep patterns, academic demands, or personality characteristics to gain a deeper understanding of the pathways through which stress affects caffeine consumption. These results further advocate for the inclusion of stress reduction strategies within educational and occupational environments to reduce dependence on stimulants and encourage healthier coping mechanisms among young adults.

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