

Research Paper

Decoding Mind: Exploring Personality Traits and Metacognition among College Students

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ABSTRACT

The mind of the college students in the present stress and strain era is being decoded by the academicians to identify the interplay between inner resources and cognitive performances. Attempt has been made to promote mental abilities by applying various indigenous intervention programmes. The students who have practiced NCC and Art of living courses have witnessed a notable increment in their cognitive abilities by plummeting allostatic load and psychological vulnerabilities. In the present study a pioneer attempt has been made to decipher the mind of the college students by establishing connection between personality traits and metacognitive abilities among N = 300 college students (100 Art of Living program + 100 National Cadet Corps + 100 Normal students) divided into two comparable halves based on the Gender that comprised of N = 50 subjects in each group. They were assessed by using NEO Five-Factor Inventory of (Costa & McCrae, 1992) and the Metacognitive Skill Scale (Gupta & Suman, 2017). The results based on correlation analysis revealed that the Extraversion and Conscientiousness dimensions of the personality traits were positively and significantly correlated ($p < .01$) with all sub-dimensions of metacognitive abilities, whereas openness ($p < .05$) only with the evaluation skills. Specifically, the most notable correlation was found in the Art of Living group followed with NCC and the control groups. This suggests that personality traits played a pivotal role in the cognitive abilities of college students.

Keywords: *Personality Traits, Metacognition, Planning Skills, Implementation Skills, Monitoring Skills, Evaluation Skills, Sudarshan Kriya Yoga (SKY), & NCC*

College is an important phase in an individual's life and a stepping stone for career prospects that fetch the opportunity to explore a student's potential. It gives a platform to make new associations and expand social horizons to develop their personality and cognitive abilities. Students in colleges are full of enthusiasm and vigor which is required to change the world. They are the creators of their life and discover their abilities to gain the confidence required for future. Nevertheless, if students keep themselves open, and expose themselves to a stimulating environment, it will enhance their overall wellbeing and cognitive performance.

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With an ever-changing environment now students need a platform that helps them in grooming their personalities, develop critical thinking, and foster cognitive abilities as well as physical and mental well-being. Structured programs like the Art of Living and NCC courses provide excellent platforms for individuals to boost their overall development. During college days if the students engage themselves in physical and mindfulness exercises through aforesaid courses, they can turn their fortune by accomplishing better in their future (Evans, 2020). Research done on 2000 individuals in Germany found that the students who are involved in various exercises have larger grey areas and larger brain volumes. A study done by the department of psychology, at Syracuse University on 37 participants found that individuals, who have traits associated with mindfulness, do well on cognitive tasks (Lintern, 2020). If college-level adolescents develop cognitive abilities it will induce confidence in them to face global competition and improve performance.

Cognition, the ability to process and understand information, is essential for daily functioning (Robinson, 2012; Plomin, 1999). Metacognition, a higher-order cognitive ability, involves awareness and regulation of one's cognitive processes (Flavell, 1976; Meichenbaum, 1985). Understanding metacognitive abilities can enhance learning and problem-solving skills. Whereas, Personality encompasses mental and social attributes, it is the totality of an individual's perception, senses, and actions. It involves behavioral patterns, thoughts, and emotions that adapt to situations (Mischel, 1977; Morgan & King, 1993).

Several studies have explored the relationship between personality traits and cognitive abilities, Tasgit & Kaya (2021) examined the relationship between personality traits and strategic thinking skills among 824 university students, the study revealed that neurotic personality trait has a significant and negative effect on strategic thinking, conscientiousness has highest positive effect on strategic thinking whereas agreeableness has weakest effect on strategic thinking. Ozturk (2021) studied the relation of metacognition, personality, and foreign language among 244 students, The study found that personality traits namely Conscientiousness, Openness to Experience, and Agreeableness explained 20% of meta-cognitive knowledge, and the study also found that 16% of meta-cognitive regulation was attributed to Conscientiousness and Openness to Experience. Dong et al. (2022) examined the role of personality traits on academic performance, the result stated that personality traits are the strong predictors of better academic performance especially extraversion and agreeableness. Though, limited researches have specifically examined this connection among NCC cadets, Art of Living program students, and a control group. Existing studies mostly focus on general student populations, ignoring how structured training programs like NCC and mindfulness-based practices like the Art of Living program influence metacognitive abilities. This study aims to address these gaps by exploring the relationship between personality traits and metacognitive abilities among college students, emphasizing the significance of structured environments like the Art of Living and NCC programs contributing to a deeper understanding of the role of structured training and mindfulness practices in cognitive development. The need and significance of the study is as follows:-

NEED AND SIGNIFICANCE OF THE PRESENT STUDY

The study, "Decoding Minds: Exploring Personality Traits as Predictors of Metacognition among college students" has become important in the present scenario. Cognitive abilities are important for career prospects that enhance our thinking and problem-solving abilities. It may enhance awareness and improve concentration as to how an individual processes information. It helps to make decisions rationally and if cognitive skills are used to their fullest potential it helps individuals to become successful in all domains. Personality traits

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like Extraversion, Openness, Agreeableness, and, Conscientiousness may enhance individual cognitive abilities. Further, the college provides structured platforms like Art of Living and NCC courses for mindfulness and physical training that in turn develop a strong foundation stone for their future by developing their cognitive abilities. Thus, to sum up, this study becomes more important in the present scenario where youth are becoming more stressed and fatigued, directionless and uninterested, engaging them in mindfulness and physical activities will help them bounce back and help them channelize their energies in the right direction.

METHOD

Sample

Purposive sampling was employed to select a total sample of N= 300 undergraduate college students. A total of three groups were studied. Each group comprises 100 respondents those were further subdivided into two comparable halves based on the gender that comprises of N = 50 students in each group.

1. Art of Living program (SKY practitioner): Students who had completed the course three months ago or earlier were selected.
2. National Cadet Corps (NCC) participants: Students who had been enrolled in the course for at least three months or longer were selected.
3. Control group (students with no exposure to the above programs)

Each group was further divided into two gender-based subgroups of 50 students each.

Tools Used

- **NEO Five-Factor Inventory. Costa and McCrae (1992):** It is a version of form S of NEO PI-R constructed by Costa and McCrae in 1985. It has a total of 60 items divided equally into five domains having 12 items in each. It measures Neuroticism, Extraversion, Openness, Agreeableness, and Conscientiousness the five domains of Personality. It involves a five-point Likert Scale, which is self-administered. It is a reliable and valid measure. The NEO-FFI demonstrates good reliability, with Cronbach's alpha ranging from **0.68 to 0.86** and test-retest reliability between **0.75 and 0.90**, indicating consistent measurement over time.
- **Metacognitive Skill Scale. Gupta and Suman. (2017):** The Metacognitive Skill Scale was developed by Gupta and Suman, 2017. It measures four dimensions of metacognitive skills namely Planning, Implementation, Monitoring, and Evaluation Skills, using a five point Likert scale. It involves a five-point Likert scale. Its reliability ranges from $r = .76$ to 0.94.

RESULTS

The aim of the present investigation was to find out the impact of Personality Traits on Metacognition of college students. The results of the study are presented in the following order:

- **Group Comparison**
- **Correlational Analysis**

Group Comparison: A comprehensive comparison of three groups namely NCC (National Cadet Corps), Art of Living (AOL) program, and the Control Group (CG) across various Personality Traits variables and Metacognitive Skills.

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Table 1 Comparing NCC, Art of Living Program, and Control Groups on Personality Traits, and Metacognitive Skills (With Standard Deviations)

| Measure | Groups | AOL | NCC | CG | Average |
|------------------------------|----------|--------------|--------------|--------------|---------|
| Personality Traits | | | | | |
| Neuroticism | Male | 18.90 (5.49) | 22.56 (6.50) | 23.86 (6.08) | 21.77 |
| | Female | 21.54 (7.93) | 22.64 (6.30) | 25.88 (6.00) | 23.35 |
| | Average | 20.22 | 22.60 | 24.87 | |
| | Total SD | (6.82) | (6.40) | (6.04) | |
| Extraversion | Male | 27.92 (5.45) | 27.34 (5.60) | 26.70 (5.63) | 27.32 |
| | Female | 28.18 (5.20) | 28.12 (4.26) | 26.74 (6.50) | 27.68 |
| | Average | 28.05 | 27.73 | 26.72 | |
| | Total SD | (5.333) | (4.98) | (6.08) | |
| Openness | Male | 28.78 (5.97) | 24.60 (4.53) | 23.66 (5.63) | 25.68 |
| | Female | 28.90 (5.92) | 25.04 (6.48) | 23.96 (4.13) | 25.96 |
| | Average | 28.84 | 24.82 | 23.81 | |
| | Total SD | (5.95) | (5.59) | (4.94) | |
| Agreeableness | Male | 26.68 (4.94) | 25.24 (4.71) | 24.42 (4.04) | 25.44 |
| | Female | 26.64 (5.12) | 25.58 (5.24) | 24.92 (5.43) | 25.71 |
| | Average | 26.66 | 25.41 | 24.67 | |
| | Total SD | (5.03) | (4.98) | (4.79) | |
| Conscientiousness | Male | 29.78 (6.22) | 33.22 (5.36) | 30.64 (5.81) | 31.21 |
| | Female | 32.76 (8.29) | 31.56 (6.95) | 32.06 (5.70) | 32.12 |
| | Average | 31.27 | 32.39 | 31.35 | |
| | Total SD | (7.33) | (6.21) | (5.76) | |
| Metacognitive Skills | | | | | |
| Planning Skills | Male | 47.34 (6.71) | 49.10 (7.60) | 47.22 (5.34) | 47.88 |
| | Female | 47.78 (7.97) | 49.94 (6.58) | 49.24 (5.21) | 48.98 |
| | Average | 47.56 | 49.52 | 48.23 | |
| | Total SD | (7.37) | (7.11) | (5.28) | |
| Implementation Skills | Male | 36.56 (5.29) | 36.24 (6.00) | 35.7 (4.71) | 38.16 |
| | Female | 36.88 (5.56) | 37.76 (5.26) | 36.8 (4.70) | 37.14 |
| | Average | 36.72 | 37 | 36.25 | |
| | Total SD | (5.43) | (5.64) | (4.71) | |
| Monitoring Skills | Male | 41 (7.54) | 44.06 (7.80) | 41.62 (5.79) | 42.22 |
| | Female | 42.78 (6.63) | 46.30 (5.54) | 44.96 (5.09) | 44.68 |
| | Average | 41.89 | 45.18 | 43.29 | |
| | Total SD | (7.10) | (6.77) | (5.45) | |
| Evaluation Skills | Male | 38.28 (9.31) | 39.64 (7.78) | 37.34 (6.08) | 38.42 |
| | Female | 38.96 (6.46) | 39.32 (5.50) | 38.80 (5.09) | 39.02 |
| | Average | 38.62 | 39.48 | 38.07 | |
| | Total SD | (8.01) | (6.74) | (5.61) | |

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| | | | | | |
|---|----------|-----------------------|-----------------------|-----------------------|---------------|
| Total Score Metacognitive Skills | Male | 163.18 (23.27) | 169.04 (27.09) | 161.88 (18.40) | 166.82 |
| | Female | 166.4 (22.74) | 173.12 (19.47) | 169.8 (15.68) | 169.77 |
| | Average | 164.79 | 171.08 | 165.84 | |
| | Total SD | (23.01) | (23.59) | (17.09) | |

SDs* are included in Parentheses

1 Comparison of NCC, Art of Living (AOL) Program, and Control Groups on Personality Traits and Metacognitive Skills (Including Standard Deviations)

Table 1 presents the mean scores along with standard deviations (SDs) in parentheses, providing insight into the variability within each group.

Personality Traits

- **Neuroticism:** This trait assesses emotional stability, with lower scores indicating greater resilience. The AOL group demonstrated the lowest neuroticism levels (M = 20.22, SD = 6.82), whereas the Control Group (CG) exhibited the highest (M = 24.87, SD = 6.04), suggesting greater emotional fluctuations. The NCC group (M = 22.60, SD = 6.40) scored in between.
- **Extraversion:** Reflecting sociability and energy, the AOL group had the highest extraversion levels (M = 28.05, SD = 5.33), closely followed by NCC (M = 27.73, SD = 4.98), while CG had the lowest (M = 26.72, SD = 6.08). The higher SD in CG suggests a wider range of extraversion levels within this group.
- **Openness:** Representing creativity and curiosity, the AOL group had the highest openness score (M = 28.84, SD = 5.03), while CG scored the lowest (M = 23.81, SD = 4.94). NCC (M = 24.82, SD = 5.59) fell in between but had the highest SD, indicating greater individual differences in openness among its members.
- **Agreeableness:** Scores for agreeableness were highest in the AOL group (M = 26.66, SD = 5.03), followed by NCC (M = 25.41, SD = 4.98) and CG (M = 24.67, SD = 4.79).
- **Conscientiousness:** This trait, associated with discipline and organization, was highest in NCC (M = 32.39, SD = 6.21), with CG (M = 32.39, SD = 6.21) and AOL (M = 31.27, SD = 7.33) following. The higher SD in AOL suggests greater individual variability in conscientiousness within this group.

Metacognitive Skills

- **Planning Skills:** Planning Skills were strongest in NCC (M = 49.52, SD = 7.11), followed by CG (M = 48.23, SD = 5.28) and AOL (M = 47.56, SD = 7.37).
- **Implementation Skills:** These skills showed the highest scores in NCC (M = 37, SD = 5.64), followed by the AOL group (M = 36.72, SD = 5.43), while the control group had the lowest (M = 36.25, SD = 4.71).
- **Monitoring Skills:** These skills showed the highest scores in NCC (M = 45.18, SD = 6.77), while AOL had the lowest (M = 41.89, SD = 7.63) while the control group scored (M = 43.29, SD = 5.45).
- **Evaluation Skills:** Evaluation Skills were highest in NCC (M = 39.48, SD = 6.74), while AOL (M = 38.62, SD = 8.01) and CG (M = 38.07, SD = 5.61) followed.
- **Total Metacognitive Skills Score:** The NCC group had the highest metacognitive skills (M = 171.08, SD = 23.59), while AOL (M = 164.79, SD = 23.01) and CG (M = 165.84, SD = 17.09) followed.

The **AOL group** stood out with high scores in extraversion, openness, and agreeableness while also exhibiting lower levels of neuroticism. However, the larger standard deviations in some traits suggest that individual experiences varied, with some participants showing significantly stronger traits than others. On the other hand, the **NCC group** excelled in conscientiousness and demonstrated strong performance across all aspects of metacognitive skills, emphasizing the positive impact of structured training. Meanwhile, the **Control Group** generally had the lowest scores across most traits, with higher variability in certain areas, indicating a wider range of individual differences. Overall, these findings highlight the significant influence of structured programs like NCC in enhancing metacognitive abilities, helping individuals improve their planning, monitoring, execution, and evaluation skills.

Correlational Analysis

Pearson’s Product Moment Correlation was applied to find out the correlation between the Five Dimensions of Personality Traits (Neuroticism, Extraversion, Openness, Agreeableness, and Conscientiousness) with four dimensions of Metacognitive Skills (Planning Skills, Implementation Skills, Monitoring Skills, and Evaluation Skills).

Correlation analysis was carried out between Personality Traits and Metacognitive Skills which is presented in the following tables:

Table 2 Inter-Correlation of Personality Trait with Metacognitive Skills among College Students.

| Personality Traits | Metacognitive Skills | | | |
|--------------------|----------------------|-----------------------|-------------------|-------------------|
| | Planning Skills | Implementation Skills | Monitoring Skills | Evaluation skills |
| Neuroticism | -0.010 | 0.029 | 0.000 | -0.021 |
| Extraversion | 0.272** | 0.059** | 0.213** | 0.204** |
| Openness | 0.072 | -0.002 | 0.026 | 0.120* |
| Agreeableness | 0.021 | 0.073 | -0.031 | -0.059 |
| Consciousness | 0.413** | 0.168** | 0.441** | 0.345** |

****p < 0.01, *p < 0.05**

2. Inter-Correlation of Personality Trait with Metacognitive Skills among College Students

Planning Skills

- It is clear from table 2 that there is significant and positive correlation with two dimension of personality trait.
- Extraversion (r = 0.272, p < 0.01) and Conscientiousness (r = 0.413, p < 0.01) are two dimension of personality trait that has a positive and significant correlation. Depicting, that college students will be higher on Planning Skills if they are higher on Extraversion and Conscientiousness.

Implementation Skills

- Table 2 clearly states that there is positive and significant correlation with two dimension of personality traits.

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- Extraversion ($r = 0.059$, $p < 0.01$) and Conscientiousness ($r = 0.168$, $p < 0.01$) are two dimension of personality trait that have a positive and significant relation with implementation skill.
- It can be sum-up from the results that if college students are high on Extraversion and Conscientiousness hey will be high on Implementation skills.

Monitoring Skills

- Table 2 clearly states that there is positive and significant correlation with two dimension of personality traits.
- Two dimensions of personality, Extraversion ($r = 0.213$, $p < 0.01$) and Conscientiousness ($r = 0.441$, $p < 0.01$) is positively and significantly related to monitoring skills, thus meaning that if male and female students are high on Extraversion and Conscientiousness they will surely be high on monitoring skills.

Evaluation Skills

- Table 2 clearly states that there is positive and significant correlation with three dimension of personality traits.
- The table states that Extraversion ($r = 0.204$, $p < 0.01$), Openness ($r = 0.120$, $p < 0.01$), and Conscientiousness ($r = 0.345$, $p < 0.01$) has a positive and significant and correlation with evaluation skills among college students.
- It can be summarized that high score on all noted three variable namely Extraversion, Openness and Conscientiousness will contribute to high evaluation skills among college students.

Table 3 Inter-Correlation of Personality Trait with Metacognitive Skills among Male College Students

| Personality Traits | Metacognitive Skills | | | |
|--------------------|----------------------|-----------------------|-------------------|-------------------|
| | Planning Skills | Implementation Skills | Monitoring Skills | Evaluation Skills |
| Neuroticism | 0.063 | 0.045 | 0.122 | -0.052 |
| Extraversion | -0.008 | 0.080 | -0.157 | -0.090 |
| Openness | 0.071 | -0.009 | 0.117 | 0.112 |
| Agreeableness | 0.011 | 0.086 | -0.013 | -0.042 |
| Consciousness | 0.179 | 0.388** | 0.241 | 0.114 |

** $p < 0.01$, * $p < 0.05$

3 Inter-Correlation of Personality Trait with Metacognitive Skills among Male College Students

Implementation Skills

Table 3 clearly states that there is positive and significant correlation with one dimension of personality traits. Conscientiousness ($r = 0.388$, $p < 0.01$) is the dimension of personality trait that have a positive and significant relation with implementation skills. From the results it could be concluded that if males college students are high on conscientiousness and understanding motivation they will be high on implementation skills.

Table 4 Inter-Correlation of Personality Trait with Metacognitive Skills among Female College Students

| Personality Traits | Metacognitive Skills | | | |
|--------------------|----------------------|-----------------------|-------------------|-------------------|
| Variables | Planning Skills | Implementation Skills | Monitoring Skills | Evaluation skills |
| Neuroticism | -0.094 | -0.038 | -0.189 | 0.083 |
| Extraversion | 0.225 | -0.081 | 0.045 | 0.168 |
| Openness | -0.178 | -0.112 | -0.001 | 0.020 |
| Agreeableness | -0.060 | -0.023 | -0.058 | -0.127 |
| Consciousness | 0.207 | 0.348* | 0.408** | 0.243 |

****p < 0.01, *p < 0.05**

4 Inter-Correlation of Personality Trait with Metacognitive Skills among Female College Students

Implementation Skills

Table 4 clearly states that there is a positive and significant correlation with one dimension of personality traits. Conscientiousness ($r = 0.348, p < 0.05$) is the only dimension of a personality trait that has a positive and significant relation with implementation skills thereby meaning that if college female students are high on conscientiousness they will be high on implementation skills.

Monitoring Skills

Table 4 clearly states that there is positive and significant correlation with one dimension of personality traits. One dimensions of personality is conscientiousness ($r = 0.408, p < .01$) is positively and significantly related to monitoring skills, thus meaning that if college female students are high on conscientiousness they will surely be high on monitoring skills.

Table 5 Inter-Correlation of Personality Trait with Metacognitive Skills among Art of Living Program (SKY Practitioner) Male Students

| Personality Traits | Metacognitive Skills | | | |
|--------------------|----------------------|-----------------------|-------------------|-------------------|
| Variables | Planning Skills | Implementation Skills | Monitoring Skills | Evaluation skills |
| Neuroticism | -0.360* | -0.277 | -0.376** | -0.246 |
| Extraversion | 0.423** | 0.286* | 0.367** | 0.205 |
| Openness | 0.094 | -0.084 | 0.081 | 0.176 |
| Agreeableness | -0.321* | -0.409** | -0.456** | -0.437** |
| Consciousness | 0.417** | 0.627** | 0.587** | 0.509** |

****p < 0.01, *p < 0.05**

5. Inter-Correlation of Personality Trait with Metacognitive Skills among Art of Living Program (SKY Practitioner) Male Students

Planning Skills

- It is clear from above Table 5 that there is a significant and negative correlation between two dimension of personality traits and a significant and positive correlation between two dimensions of personality traits.
- Neuroticism ($r = -0.360$, $p < 0.05$) and Agreeableness ($r = -0.321$, $p < 0.05$) are two domains of Personality traits that have a significant negative correlation with Planning. Therefore, if males of AOL are higher on Neuroticism and Agreeableness they will be lower on Planning Skills.
- Similarly, if males are higher on the two dimensions of personality traits i.e., Extraversion ($r = 0.423$, $p < 0.01$) and Conscientiousness ($r = 0.417$, $p < 0.01$) they will be higher on Planning Skills.

Implementation Skills

- Table 5 clearly states that there is a positive and significant correlation with two dimensions of personality traits and a significant and negative correlation with one dimension of personality traits.
- Extraversion ($r = 0.286$, $p < 0.05$) and Conscientiousness ($r = 0.627$, $p < 0.01$) are two dimension of personality traits that have a positive and significant relation with implementation skill and one dimension of personality traits i.e. Agreeableness ($r = 0.627$, $p < 0.01$) has a negative relationship with Implementation skills of male students.

Monitoring Skills

- Table 5 clearly states that there is a positive and significant correlation between the two dimensions of personality traits and a substantial and negative correlation between the two s of personality traits.
- Two dimensions of personality, Extraversion ($r = 0.367$, $p < 0.01$) and Conscientiousness ($r = 0.587$, $p < 0.01$) are positively and significantly related to monitoring skills, meaning that students high on extraversion Conscientiousness will be high on monitoring skills and the results further states that Neuroticism ($r = 0.376$, $p < 0.01$) and Agreeableness ($r = 0.456$, $p < 0.01$) are negatively and significantly related to monitoring skills, thus meaning that if students are high on neuroticism and agreeableness they will surely be low on monitoring skills.

Evaluation Skills

- Table 5 clearly states that there is a positive and significant correlation with one dimension of personality traits and a significant and negative correlation with one dimension of personality traits.
- The table states that ($r = -0.437$, $p < 0.01$) has a negative and significant correlation with Agreeableness and Conscientiousness ($r = 0.509$, $p < 0.01$) has a positive and significant correlation with evaluation among Art of Living program male students. Highlighting that a student evaluation skill will be high if he will be low on Agreeableness and high on Conscientiousness.

Table 6 Inter-Correlation of Personality Trait with Metacognitive Skills among Art of Living Program (SKY Practitioner) Female Students

| Personality Traits | Metacognitive Skills | | | |
|--------------------|----------------------|-----------------------|-------------------|-------------------|
| | Planning Skills | Implementation Skills | Monitoring Skills | Evaluation skills |
| Neuroticism | 0.091 | 0.316* | 0.077 | 0.113 |
| Extraversion | 0.374** | 0.364** | 0.381** | 0.304* |
| Openness | 0.323* | 0.264 | 0.403** | 0.278 |
| Agreeableness | 0.362** | 0.340* | 0.311* | 0.412** |
| Consciousness | 0.541** | 0.428** | 0.502** | 0.427** |

****p < 0.01, *p < 0.05**

6 Inter-Correlation of Personality Trait with Metacognitive Skills among Art of Living Program (SKY Practitioner) Female Students

Planning Skills

- It is clear from Table 6 that there is significant and positive correlation between the four dimensions of personality traits.
- If AOL females are higher on the four dimensions of personality traits i.e., Extraversion ($r = 0.374$, $p < 0.01$), Openness ($r = 0.323$, $p < 0.05$), Agreeableness ($r = 0.362$, $p < 0.01$) and Conscientiousness ($r = 0.541$, $p < 0.01$) they will be higher on Planning Skills.

Implementation Skills

- Table 6 clearly states that there is a positive and significant correlation between the four dimensions of personality traits
- Neuroticism ($r = 0.316$, $p < 0.05$), Extraversion ($r = 0.364$, $p < 0.01$), Agreeableness ($r = 0.340$, $p < 0.05$), and Conscientiousness ($r = 0.428$, $p < 0.01$) are four dimensions of a personality trait that have a positive and significant relation with implementation skill of female students. If females are high on these four dimensions they will be high on implementation skills.

Monitoring Skills

- Table 6 clearly states that there is a positive and significant correlation with the four dimensions of personality traits.
- Four dimensions of personality, Extraversion ($r = 0.381$, $p < 0.01$), Openness ($r = 0.403$, $p < 0.01$), Agreeableness ($r = 0.311$, $p < 0.05$) and Conscientiousness ($r = 0.502$, $p < 0.01$) is positively and significantly related to monitoring skills, thus meaning that if students are high on Extraversion, Openness, Agreeableness and Conscientiousness they will surely be high on monitoring skills.

Evaluation Skills

- Table 6 clearly states that there is a positive and significant correlation with the three dimensions of personality traits.

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- The table states that Extraversion ($r = .304$, $p < 0.05$), Agreeableness ($r = 0.412$, $p < 0.01$) and Conscientiousness ($r = 0.427$, $p < 0.01$) have a positive and significant correlation with evaluation among female Art of Living students.
- It can be concluded that if AOL program female students are high on Agreeableness and Conscientiousness they will be high on evaluation skills.

Table 7 Inter-Correlation of Personality Trait with Metacognitive Skills among NCC Male Cadets

| Personality Traits | Metacognitive Skills | | | |
|--------------------|----------------------|-----------------------|-------------------|-------------------|
| | Planning Skills | Implementation Skills | Monitoring Skills | Evaluation skills |
| Neuroticism | 0.094 | 0.091 | 0.095 | 0.153 |
| Extraversion | 0.419** | 0.071 | 0.428** | 0.429** |
| Openness | -0.009 | -0.016 | -0.155 | -0.072 |
| Agreeableness | -0.108 | 0.150 | 0.001 | -0.080 |
| Consciousness | 0.483** | 0.131 | 0.580** | 0.410** |

****p < 0.01, *p < 0.05**

7 Inter-Correlation of Personality Trait with Metacognitive Skills among NCC Male Cadets

Planning Skills

- It is clear from Table 7 that there is a significant and positive correlation between the two dimensions of personality traits.
- If NCC male cadets are higher on the two dimensions of personality traits i.e., Extraversion ($r = 0.419$, $p < 0.01$) and Conscientiousness ($r = 0.483$, $p < 0.01$) they will be higher on Planning Skills.

Monitoring Skills

- Table 7 clearly states that there is a positive and significant correlation between the two dimensions of personality.
- Two dimensions of personality, Extraversion ($r = 0.428$, $p < 0.01$) and Conscientiousness ($r = 0.580$, $p < 0.01$) are positively and significantly related to monitoring skills, thus meaning that if NCC male cadets are high on Extraversion and Conscientiousness they will surely be high on monitoring skills.

Evaluation Skills

- Table 7 clearly states that there is a positive and significant correlation between two dimensions of personality traits.
- The table states that Extraversion ($r = 0.429$, $p < 0.01$) and Conscientiousness ($r = 0.410$, $p < 0.01$) have a positive and significant correlation with Evaluation skills among male NCC Cadets, therefore if a male cadet is high on Extraversion and Conscientiousness they will be high on evaluation skills.

Table 8 Inter-Correlation of Personality Trait with Metacognitive Skills among NCC Female Cadets

| Personality Traits | Metacognitive Skills | | | |
|--------------------|----------------------|-----------------------|-------------------|-------------------|
| | Planning Skills | Implementation Skills | Monitoring Skills | Evaluation skills |
| Neuroticism | -0.119 | -0.288* | -0.128 | -0.210 |
| Extraversion | 0.149 | -0.012 | 0.146 | 0.237 |
| Openness | 0.152 | 0.116 | 0.206 | 0.187 |
| Agreeableness | 0.192 | 0.370** | 0.159 | 0.025 |
| Conscientiousness | 0.417** | 0.559** | 0.281* | 0.245 |

****p < 0.01, *p < 0.05**

8 Inter-Correlation of Personality Trait with Metacognitive Skills among NCC Female Cadets

Planning Skills

- It is clear from Table 8 that there is a significant and positive correlation with only one dimension of personality trait.
- Conscientiousness ($r = 0.417$, $p < 0.01$) domains of Personality traits have a significant positive correlation with Planning Skills. Therefore, if female NCC Cadets are higher on Conscientiousness they will be higher on Planning Skills.

Implementation Skills

- Table 8 clearly states that there is a positive and significant correlation with two dimensions of personality traits and a significant and negative correlation with one dimension of personality traits.
- Agreeableness ($r = 0.370$, $p < 0.01$) and Conscientiousness ($r = 0.559$, $p < 0.01$) are two dimensions of personality traits that have a positive and significant relation with implementation skill and one dimension of personality traits i.e. Neuroticism ($r = -0.288$, $p < 0.05$) has a negative relationship with Implementation skills of female NCC Cadets.
- Thereby, implementing that if female NCC Cadets are high on Agreeableness and Conscientiousness and low on Neuroticism they will be high on Implementation skills.

Monitoring Skills

- Table 8 clearly states that there is positive and significant correlation with one dimensions of personality traits.
- Dimensions of personality, Conscientiousness ($r = 0.281$, $p < 0.05$) is positively and significantly related to monitoring skills. Thus, meaning that if female NCC Cadets are high on Conscientiousness they will surely be high on monitoring skills.

Table 9 Inter-Correlation of Personality Trait with Metacognitive Skills among Control Group Males

| Personality Traits | Metacognitive Skills | | | |
|--------------------|----------------------|-----------------------|-------------------|-------------------|
| Variables | Planning Skills | Implementation Skills | Monitoring Skills | Evaluation Skills |
| Neuroticism | 0.063 | 0.045 | 0.122 | -0.052 |
| Extraversion | -0.008 | 0.080 | -0.157 | -0.090 |
| Openness | 0.071 | -0.009 | -0.117 | 0.112 |
| Agreeableness | 0.011 | 0.086 | -0.013 | -0.042 |
| Consciousness | 0.179 | 0.388** | 0.241 | 0.114 |

****p < 0.01, *p < 0.05**

9 Inter-Correlation of Personality Trait with Metacognitive Skills among Control Group Male Students

Implementation Skills

- Table 9 clearly states that there is positive and significant correlation with one dimension of personality traits.
- Conscientiousness ($r = 0.388$, $p < 0.01$) is the one dimension of personality trait that have a positive and significant relation with implementation skills of a control group male students.
- Thereby, meaning that if control group males are high on Conscientiousness they will be high on Implementation skills.

Table 10 Inter-Correlation of Personality Trait with Metacognitive Skills among Control Group Females

| Personality Traits | Metacognitive Skills | | | |
|--------------------|----------------------|-----------------------|-------------------|-------------------|
| Variables | Planning Skills | Implementation Skills | Monitoring Skills | Evaluation Skills |
| Neuroticism | -0.094 | -0.038 | -0.189 | 0.083 |
| Extraversion | 0.225 | -0.081 | 0.045 | 0.168 |
| Openness | -0.178 | -0.122 | -0.001 | 0.020 |
| Agreeableness | -0.060 | -0.023 | -0.058 | -0.127 |
| Consciousness | 0.207 | 0.348* | 0.408** | 0.243 |

****p < 0.01, *p < 0.05**

10 Inter-Correlation of Personality Trait with Metacognitive Skills among Control Group Female Students

Implementation Skills

- Table 10 clearly states that there is a positive and significant correlation with only one dimension of personality traits.

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- Conscientiousness ($r = 0.348$, $p < 0.01$) is the one dimension of a personality trait that has a positive and significant relation with implementation skills.
- It could be concluded that if females of the control group are high on Conscientiousness they will also be high on Implementation skills.

Monitoring Skills

- Table 10 clearly states that there is a positive and significant correlation with one dimension of personality traits.
- One dimension of personality has a positive and significant correlation with Conscientiousness ($r = 0.408$, $p < .01$) thus meaning that if students are high on Conscientiousness they will surely be high on monitoring skills.

DISCUSSION

Every individual has a unique personality. These personality traits may impact a child's cognitive abilities. In recent times there has been research evidence that the stimulating environment may increase cognitive abilities among individuals. At the college level students are young energy bundles if that energy could be channelized constructively it can contribute to increasing cognitive ability which will further benefit the individual to make decisions mindfully overall proving to be an asset in child development. Thus, it becomes significant to classify that weather the dimensions of personality traits have an impact on individual's cognitive abilities and does a specific environment contributes to metacognition among college students or not.

The study found that among college students, extraversion and conscientiousness positively and significantly correlate with planning, implementation, and monitoring skills. Additionally, extraversion, openness, and conscientiousness show a significant positive correlation with evaluation skills. These results align with previous studies.

Supporting research includes a longitudinal study (Furnham et al., 2003) on British university students, which found that the Big Five personality traits are stronger predictors of academic performance than cognitive ability. Another study (Spector et al., 2006) on 429 individuals in a management assessment center revealed a positive correlation between cognitive problem-solving exercises and conscientiousness. Abedini (2021) studied 240 Tehran University students and found that meta-cognitive awareness and creativity mediate the relationship between extraversion, openness, conscientiousness, and academic performance, with high meta-cognitive awareness acting as a moderator. Thus, it can be stated that personality traits have a positive effect on the cognitive abilities of college students.

The present study found that among AOL male SKY practitioner students, planning skills negatively correlate with neuroticism and agreeableness but positively correlate with extraversion and conscientiousness. Implementation skills show a positive correlation with extraversion and conscientiousness, while agreeableness has a negative relationship. Monitoring skills are positively linked to extraversion and conscientiousness but negatively related to neuroticism and agreeableness. Additionally, agreeableness negatively correlates with AOL males, whereas conscientiousness shows a positive correlation. For AOL female SKY practitioner students, planning skills are influenced by extraversion, openness, agreeableness, and conscientiousness. Implementation skills have a positive correlation with neuroticism, extraversion, agreeableness, and conscientiousness. Monitoring skills are

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significantly related to extraversion, openness, agreeableness, and conscientiousness, while evaluation skills show a positive correlation with agreeableness and conscientiousness. Supporting studies include Irani (2013) found that regular practice of sudarshan kriya for 3 months have a positive impact on the practitioner by significant increase in satvik traits (associated with discipline, calmness and positive emotions) and decreased tamasik traits (linked to negativity and dysregulation). Ashokkumar and Asthana (2016) found that SKY practitioners exhibit higher self-efficacy than non-practitioners, though satisfaction with life did not differ significantly. Chandra et al. (2017), demonstrated that Sudarshan Kriya Yoga (SKY) reduces mental stress and enhances cognitive performance. Kolhe (2021) studied senior government officers practicing SKY, revealing improved mind-body connection, reduced stress, better sleep, and enhanced cognitive function, which contributed to greater well-being and resilience. Subramanian et al. (2023) investigated 4-day Sudarshan kriya Yoga (SKY) impact on the emotional, mental, and cognitive health of teenagers. Total of 275 adolescents participated in the study. The study found that cognitive performance improved right after the workshop, and these benefits were maintained 40 days later for those who kept practicing SKY. It was also found that mental health also improved after the workshop, with continued improvement reported after 40 days. Half the participants reported fewer peer problems after SKY, and after 40 days, no one reported significant emotional, conduct, hyperactivity, or peer problems.

Further, the study found that among NCC male students, planning skills positively correlate with extraversion and conscientiousness. Monitoring and evaluation skills also show a significant positive correlation with these traits. Among NCC female students, conscientiousness is positively linked to planning skills, while agreeableness and conscientiousness positively correlate with planning skills, and neuroticism shows a negative correlation. Monitoring skills also have a significant positive correlation with conscientiousness. These findings align with previous research. Supporting studies include Gunjan Singh et al., which examined 400 male participants (200 military cadets and 200 civilian students). The study found that military cadets had higher self-esteem and an internal locus of control, whereas civilian students exhibited a more external locus of control. Hasan (2021) conducted research on 300 undergraduate students (200 male, 100 female) from Bangalore, comparing NCC-trained and non-trained students. The results showed significant personality differences, with NCC students scoring higher on personality measures. The study used the NEO Five-Factor Inventory (NEO-FFI) to assess personality traits indicating that NCC training positively influences personality development, making NCC students more consistent and well-rounded as compared to their non-NCC peers.

For the control group, conscientiousness is the only personality trait positively related to implementation skills in both male and female students. It also positively correlates with monitoring skills.

CONCLUSION

This study highlights the interplay between personality traits and metacognition among college students. Extraversion and Conscientiousness consistently emerged as significant predictors of metacognitive abilities, particularly in structured environments like the Art of Living and NCC programs. Gender-based differences suggest the need for tailored interventions. These findings underscore the importance of fostering structured activities to enhance student's cognitive and metacognitive development, preparing them for future challenges.

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Conflict of Interest

The author(s) declared no conflict of interest.

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