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The relationship between metacognition, rumination and decisional conflict among college students

Navami Nair * and A. S. Manjari

Department of Psychology, Kristu Jayanti (Deemed to be University), Bengaluru, Karnataka, India.

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Abstract

The present study examined the relationship between metacognition, rumination, and decisional conflict among full-time college students. Grounded in the Self-Regulatory Executive Function (S-REF) model, the Metacognitive Model of Rumination, and the Metacognitive Multi-Function Model (MMFM), the study aimed to address the limited research exploring how metacognition simultaneously relates to both rumination and decisional conflict within an Indian student population. A sample of 200 college students aged 17–25 years (M = 21.50, SD = 2.08) participated in the study. Standardized self-report instruments were used, including the Metacognition Self-Assessment Scale (MSAS-18), the Ruminative Response Scale (RRS-10), and the Decisional Conflict Scale (DCS-16). Preliminary analyses indicated adequate variability in scores, though decisional conflict violated normality assumptions; therefore, Spearman's rank-order correlation was employed. Results revealed a small but statistically significant positive correlation between metacognition and rumination ($\rho = .17$, $p = .015$), and a moderate, statistically significant negative correlation between metacognition and decisional conflict ($\rho = -.31$, $p < .001$). These findings suggest that while increased metacognitive awareness may be slightly associated with greater ruminative thinking, stronger metacognitive abilities are meaningfully linked to reduced decisional conflict. The study highlights the dual and nuanced role of metacognition in cognitive-emotional functioning and underscores the importance of strengthening metacognitive regulation and mastery skills to enhance decision-making confidence among college students.

Keywords: Metacognition; Rumination; Decisional conflict; College students

1. Introduction

Metacognition, the ability to think about thinking (Flavell, 1979), has received special attention compared to other higher-order thinking skills among researchers studying learning [3,9]. Metacognition comprises both the ability to be aware of one's cognitive processes (metacognitive knowledge) and to regulate them (metacognitive control). Research in educational sciences has amassed a large body of evidence on the importance of metacognition in learning and academic achievement [16].

More recently, metacognition has been studied from experimental and cognitive neuroscience perspectives [7]. Metacognitive knowledge includes knowledge about oneself as a learner and the factors that might impact performance, knowledge about strategies, and knowledge about when and why to use strategies. Metacognitive regulation is the monitoring of one's cognition and includes planning activities, awareness of comprehension and task performance, and evaluation of the efficacy of monitoring processes and strategies. Supporting the development of metacognition is a powerful way to promote student success in college.

* Corresponding author: Navami Nair

Students with strong metacognitive skills are positioned to learn more and perform better than peers who are still developing their metacognition [16]. Students who have the ability to efficiently monitor and control their thoughts perform better academically; they adjust well when confronted with difficulties and sustain high levels of confidence in their ability to succeed [5]. The lack of metacognitive awareness enables students to fall prey to maladaptive cognitive patterns such as rumination.

Rumination is defined as the repetitive passive focus on negative feelings or experiences and is deemed a cognitive vulnerability factor for depression and anxiety [10]. Rumination is a form of perseverative cognition that focuses on negative content, generally past and present, and results in emotional distress. The metacognitive model of rumination and depression suggests that the development of rumination and its association with depression partly depends on metacognitive beliefs. Two metacognitive beliefs about rumination have been identified: positive beliefs about its utility and negative beliefs about the uncontrollability and its negative social consequences. Research suggests that metacognitive beliefs play a central role in sustaining rumination, and this holds true across non-clinical samples. This can impair decision-making abilities because rumination consumes most mental energy on unproductive self-focused cycles.

The issue of decisional conflict further complicates matters. Based on conflict theory of decision-making [8], decisional conflict is an internal struggle individuals experience when they feel uncertain, uninformed, or unsupported in carrying out their decisions. It could also come in the form of hesitancy in making decisions such as with classes, career choices, or even daily decisions such as food. This, coupled with ruminative responses and lack of metacognitive control, would lead to a state of decision-making paralysis, high stress reactivity, and poor psychological adjustment [8].

When you make a decision, your brain also “thinks about thinking” (metacognition) to see how sure you are and if you need to change your mind, even without feedback. A study found that two specific areas in the front of the brain, the dorsal anterior cingulate cortex (dACC) and lateral frontopolar cortex (lFPC), are crucial for this [14]. The dACC helps monitor uncertainty about a decision, while the lFPC helps adjust and correct decisions depending on task demands. This suggests that metacognition has its own dedicated system in the brain, separate from the initial decision-making process.

Another study explains that decision-making conflict can arise not because the options are difficult, but because people hold incorrect beliefs about their own thinking—faulty metacognitions. For example, individuals may assume that feeling uncertain means they are making a wrong choice, which increases internal conflict even when both options are reasonable. Such inaccurate metacognitive beliefs can intensify hesitation and confusion, making decision-making harder than necessary [2].

Among students, decisional conflict may arise in academic, career-related, or everyday choices, and when combined with rumination and poor metacognitive control, it can lead to heightened stress, indecision, and psychological maladjustment.

Research demonstrates that college students often experience increased stress, anxiety and feeling of indecisiveness when faced with academic and life challenges [1]. Educational pressures and familial expectations may both play a role [6]. Studies from other contexts, such as Australia and the UK, report similar patterns. Students in India often experience strong parental influence over career decisions, competitive entrance examinations, and societal stigma around mental health, all of which may increase stress and negatively impact decision-making [4]. The lack of metacognitive awareness enables students to fall prey to maladaptive cognitive patterns such as rumination This ruins their decision-making abilities because it consumes most mental energy on unproductive self-focused cycles.

Thus, the current study is a unique, as empirical research examining the combined role of metacognition, rumination, and decisional conflict is limited. Most studies by proxy measure two and imply connections to the third with minimal studies all at once using one design. This study will contribute to the understanding of how cognitive and affective processes converge on students in their daily lives. This kind of examination is very relevant in the Indian scenario where there is scanty empirical research on these dimensions especially when we are dealing with student population as cultural and educational context influences. This is important both for theoretical progress and policy interventions to promote student mental health and academic achievement.

Aim

To examine the relationship between metacognition, rumination and decisional conflict

Objectives of the Study

- To examine the relationship between metacognition and rumination among students.
- To assess the relationship between metacognition and decisional conflict among students.

2. Materials and Methods

2.1. Research Design

A quantitative correlational research design was adopted to examine the relationship between metacognition, rumination, and decisional conflict among college students.

2.2. Participants

The sample consisted of 200 full-time college students selected through purposive sampling. Both male and female participants were included in the study. The participants were selected from different regions including Kerala, Delhi, and Bangalore.

2.3. Hypotheses:

H_{01}: There is no significant relationship between metacognition and rumination.

H_{02}: There is no significant relationship between metacognition and decisional conflict.

2.4. Measures

Metacognition self-assessment scale: The MSAS (Pedone et al., 2017) was developed from the MMFM. The MSAS is a self-report measure with 18 items intended to assess MMFM subfunctions. It is scored in a five-point Likert scale (1 = never, 2 = rarely, 3 = sometimes, 4 = frequently, 5 = almost always), with a raw score that ranges from 18 to 90 [13]. In terms of reliability, the total MSAS showed strong internal consistency with a Cronbach's alpha of .88 and the subscales showed moderate to high correlations with one another and with the total score (r = .438 to .860), confirming that they assess related components of metacognition.

Rumination Response Scale 10 items: It is a 10-item measure (RRS-10) (Treynor, Gonzalez, & Nolen-Hoeksema, 2003) used to assess the impact of mindfulness on rumination. The initial 22-item RRS contained 3 factors named depression, brooding, and reflection [15]. Later, confounding items were discarded, resulting in a 10-item scale with the 2 factors brooding and reflection. Both the RRS-22 and RRS-10 have demonstrated sound internal consistency, test-retest reliability, discriminant validity, and convergent validity

Decisional Conflict Scale: The Decisional Conflict Scale (O'Connor, 1995) is a questionnaire used to assess a person's uncertainty and related factors when making a decision [11]. The DCS has three subscales: Uncertainty, Effective-Decision-Making, and Factors-Contributing-to-Uncertainty. The scale's test-retest reliability coefficient was 0.81. Internal consistency coefficients ranged from 0.78 to 0.92.

2.5. Procedure

The sample responses were collected by circulating a Google Form through online platforms, which included the informed consent form, demographic details form, and the questionnaires. The questionnaire was self-administered, and participants were able to complete it at their own pace. After completing the survey or choosing to withdraw, participants were redirected to a debriefing page that thanked them for their contribution to the study. After obtaining the completed responses, the data were stored carefully and analyzed using SPSS.

2.5.1. Inclusion Criteria

Full-time college students enrolled in undergraduate or postgraduate programs, or those who had recently completed such programs in India

- Aged between 18 and 25 years.
- Adequate proficiency in English to comprehend and complete the self-report measures.
- No reported cognitive or significant emotional difficulties that could confound study results.

2.6. Data Analysis

Statistical analysis was conducted using SPSS, including descriptive statistics and correlation analysis after testing for normality.

2.7. Research Ethics

After receiving ethical approval from the institution, the survey link was shared to recruit participants. The informed consent form was presented to prospective participants who accessed the link, explaining the purpose of the study, that participation was voluntary, that they could withdraw at any point in time, and that their identities would remain anonymous and confidential. Only individuals who provided explicit digital consent were allowed to proceed to the survey questions.

3. Results and Discussion

This section presents the results of the analyses and discusses the findings in relation to the study hypotheses and existing literature.

3.1. Descriptives

Table 1 Gender Distribution of Participants (N=200)

Gender	Frequency	Percentage
Female	99	49.5
Male	100	50.0
Prefer not to say	1	.5
Total	200	100.0

Table 2 Educational Status of Participants (N=200)

Education	Frequency	Percentage
Postgraduate	100	50.0
Undergraduate	100	50.0
Total	200	100.0

Table 3 Age Distribution of Participants (N=200)

Category	N	Min	Max	Mean	SD
Age	200	17	25	21.50	2.076

Table 1 represents the gender distribution of the sample consisting of 200 college full time students. The sample shows an almost equal representation of male (50.0%) and female (49.5%) participants, with a very small proportion (0.5%) preferring not to disclose their gender. This balanced gender composition suggests that the sample is representative in terms of gender. In terms of educational qualification, as seen in Table 2, half of the sample were undergraduates (50.0%, n = 100) and half were postgraduates (50.0%, n = 100). Table 3 shows that participants' ages ranged from 17 to 25 years, with a mean age of 21.50 years (SD = 2.08).

3.2. Correlational Analysis

Table 4 Test of Normality using Shapiro–Wilk tests

Scales	Statistic	df	Significance
MSAS18	0.975	200	0.757
RRS10	0.990	200	0.164
DCS16	0.968	200	0.000

The above Table 4 shows the result of normality testing using the Shapiro–Wilk tests, which indicated that MSAS, W = .975, p = .757, and RRS, W = .990, p = .164, did not significantly deviate from normality. However, DCS significantly deviated from normality, W = .968, p < .001. Therefore, the assumption of normality was violated for DCS. Consequently, Spearman's rank-order correlation was used for hypothesis testing. Since at least one key variable (DCS) violated normality, using Spearman's rho (nonparametric correlation) was appropriate

Table 5 Spearman's rank-order correlation results to test H_{01} and H_{02}

Variable	1	2	3
1. MSAS18 (Metacognition)	—		
2. RRS10 (Rumination)	−0.171*	—	
3. DCS16 (Decisional Conflict)	−0.306*	0.296**	—

Table 5 shows the results of Spearman's rank-order correlation to examine the relationships between metacognition (MSAS), rumination (RRS), and decisional conflict (DCS) among 200 participants. Results showed a small but statistically significant positive correlation between metacognition and rumination, ρ = .17, p = .015. Therefore, H_{01} was rejected. This finding aligns well with the Metacognitive Model of Rumination [12], which emphasizes that rumination is maintained not merely by negative thought content but by beliefs about thinking itself. Students with higher metacognitive monitoring may become more aware of their thoughts, emotions, and internal cognitive processes.

This interpretation also aligns with previous literature suggesting that certain forms of metacognitive engagement, particularly excessive self-monitoring can contribute to overthinking if not balanced by adaptive coping strategies. Therefore, the weak positive association observed in this study may reflect the dual nature of metacognition: it can be adaptive when regulation is strong but potentially linked to rumination when monitoring dominates without effective control.

Additionally, there was a moderate, statistically significant negative correlation between metacognition and decisional conflict, ρ = −.31, p < .001. Therefore, H_{02} was rejected. These findings indicate that higher metacognition is associated with slightly higher rumination and lower decisional conflict. The moderate negative relationship between metacognition and decisional conflict found in the present study provides empirical support for these claims, particularly within an Indian college student population—a group that has been underrepresented in existing research.

This also supports theoretical assumptions derived from Decisional Conflict Theory and the MMFM framework. According to the Decisional Conflict framework, decisional conflict arises from uncertainty, unclear values, and feelings of being uninformed. Metacognition, particularly monitoring and evaluation, may help individuals assess their knowledge, clarify their values, and evaluate alternatives more systematically. Students with stronger metacognitive regulation are likely better able to reflect on their thinking, recognize uncertainty as a normal component of decision-making, and adjust strategies accordingly.

This finding also aligns with neurocognitive perspectives suggesting that metacognitive systems monitor uncertainty and guide post-decision evaluation. Students with higher metacognitive abilities may experience less internal struggle because they trust their cognitive processes and are better equipped to manage doubt.

The moderate effect size (ρ = −.31) indicates a meaningful practical relationship. Unlike the weaker metacognition–rumination link, this association suggests that metacognitive competence substantially contributes to reducing

decisional uncertainty. In academic settings— where students frequently face career, academic, and personal choices— strong metacognitive skills may foster confidence and clarity in decision-making

4. Conclusion

The study found a weak but significant positive relationship between metacognition and rumination, indicating that awareness of thoughts alone may not reduce ruminative thinking without effective regulation. In contrast, metacognition showed a significant negative relationship with decisional conflict, suggesting that stronger metacognitive skills support more confident and adaptive decision-making. Overall, metacognition functions as a complex process whose impact depends on the interaction of its components rather than being purely adaptive or maladaptive.

Limitations

The study's cross-sectional design limits causal interpretations. Reliance on self-report measures may introduce response biases. The sample, restricted to college students aged 18–25, limits generalizability, and cultural variability was not extensively examined. Additionally, the use of overall metacognition scores without analyzing specific subcomponents may have constrained a more detailed understanding of underlying mechanisms.

Compliance with ethical standards

Disclosure of conflict of interest

The authors declare no conflict of interest.

Statement of ethical approval

The study was approved by the university.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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