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Exploring the Link between Emotional Schemas and Rumination: How Emotional Flexibility Acts as a Mediator

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Abstract

Background: Rumination negatively affects emotional and psychological functioning in nonclinical populations and plays an essential role in psychological disorders as a transdiagnostic factor. This study examined factors that increase individuals' vulnerability to rumination, focusing on the relationship between emotional schemas and rumination, with emotional flexibility as a mediating variable.

Methods: This descriptive-correlational study used structural equation modeling (SEM). Participants were 578 Tehran residents (381 females and 197 males), recruited through a voluntary sampling method. Data were collected using the Ruminative Response Scale (RRS), the Persian version of the Emotional Schemas Scale (ESS-P), and the Emotional Flexibility Scale (EFS). SEM was employed for data analysis.

Results: Emotional schemas significantly predicted emotional flexibility (β = -0.25, *P* = 0.009) and rumination (β = 0.55, *P* = 0.001). Emotional flexibility also significantly predicted rumination (β = -0.26, *P* = 0.007). Furthermore, emotional flexibility significantly mediated the relationship between emotional schemas and rumination. Model fit indices for both the measurement model (χ^2/df = 4.66, CFI = 0.95, NFI = 0.95, RMSEA = 0.064, GFI = 0.90, IFI = 0.95, SRMR = 0.052) and the structural model (χ^2/df = 4.44, CFI = 0.94, NFI = 0.92, RMSEA = 0.069, GFI = 0.89, IFI = 0.94, SRMR = 0.056) indicated acceptable fit.

Conclusion: These findings suggest that emotional flexibility plays a crucial mediating role in the relationship between emotional schemas and rumination. Considering emotional flexibility in this context may provide a deeper understanding of the rumination process and inform management strategies.

Keywords: Rumination, Emotional flexibility, Emotional schemas

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↑What is "already known" in this topic:
Rumination is a harmful cognitive process that significantly affects emotional and psychological functioning. It is well-established that rumination contributes to the onset and persistence of various psychological disorders, acting as a transdiagnostic factor across multiple conditions. Emotional schemas are known to influence rumination by shaping how individuals perceive and respond to their emotions. Furthermore, emotional flexibility—the ability to adapt emotion regulation strategies to specific situational demands—is critical for effectively managing rumination. However, the precise relationship between emotional schemas, emotional flexibility, and rumination remains underexplored, particularly in terms of the potential mediating role of emotional flexibility.

→What this article adds:
This study demonstrates that emotional schemas have a significant impact on both emotional flexibility and rumination. Moreover, it establishes emotional flexibility as a key mediator in the relationship between emotional schemas and rumination. These findings underscore the crucial role of emotional flexibility in understanding and addressing rumination, providing valuable insights into its potential application in psychological interventions and prevention strategies.

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Introduction

Rumination, defined as the repetitive focus on negative emotions and events, along with their causes, meanings, and consequences, is considered a maladaptive strategy for problem-solving and understanding emotional experiences (1). Rumination may result from disruptions to personal goals, producing a temporarily self-focused and non-action-oriented evaluative state that can develop into chronic ruminative styles when facing challenges (2). It occurs in both non-clinical and clinical populations, but in the latter, it often takes on a morbid, brooding quality (3, 4).

Rumination negatively affects both clinical and nonclinical groups by impairing problem-solving and goal-directed behaviors, prolonging negative emotions, limiting adaptability to changing circumstances, intensifying physiological stress responses, hindering therapeutic progress, and reducing the effectiveness of psychological interventions (5). Furthermore, it has been identified as a transdiagnostic factor contributing to the onset, persistence, and relapse of multiple psychological disorders and comorbid conditions (6).

One factor influencing rumination is emotional schemas (7). Emotional schemas encompass evaluations, core beliefs, trans-emotional beliefs, practical orientations, and response patterns regarding emotions and emotional experiences (8–10). Attention to negative thoughts and feelings, autobiographical memory of adverse events, and negative evaluations of emotions may activate maladaptive emotional schemas. These, in turn, foster ineffective coping strategies, such as rumination, when individuals face difficulties (11-13). According to Leahy (7), there are 14 emotional schemas. Negative beliefs about emotional experiences convey the notion that emotions are problematic, leading to strategies such as rumination, worry, avoidance, and blame (10, 14).

Certain variables may shape the relationship between emotional schemas and rumination. One such variable is emotional flexibility (15). Aldao defines emotional flexibility as the ability to adjust emotion regulation strategies according to situational demands to cope effectively. Individuals with higher emotional flexibility can adapt by reappraising or enhancing their emotional experiences (12). Conversely, when individuals rely rigidly on specific regulation strategies, especially under high emotional distress, psychological problems are more likely to emerge (13).

Maladaptive rumination may stem from deficits in flexibility and changes in processing modes when dealing with negative information (16). Emotional inflexibility reduces the capacity to use varied emotion regulation strategies and limits adaptive appraisal of emotional experiences, resulting in cycles of repetitive negative thoughts such as rumination (17-19). Emotional inflexibility has also been identified as a factor in maintaining emotional disorders through its link with repetitive negative thinking (18).

Additionally, reduced adaptive emotional schemas lead to lower emotional flexibility and increased emotional avoidance (20). Many processes associated with adaptive outcomes, such as coping and appraisal, depend on flexible emotional processing (21).

Previous studies have discussed the role of emotional schemas and emotional flexibility in rumination. However, it remains unclear whether emotional flexibility—beyond maladaptive interpretations of emotions—can influence emotion regulation strategies and shape rumination patterns. Alongside the negative evaluation of emotions, emotional inflexibility may contribute to the cycle of repetitive negative thinking. Thus, gaps remain in understanding the relationship between emotional variables and rumination. While the connection between emotional schemas and emotional flexibility has received limited attention, the mediating role of emotional flexibility in linking emotional schemas to rumination has been underexplored.

Based on this literature, the present study examined the direct and indirect relationships among emotional schemas, emotional flexibility, and rumination using structural equation modeling. The hypotheses were as follows: (A) Emotional schemas are directly related to rumination. (B) Emotional flexibility is directly related to rumination, and (C) Emotional flexibility mediates the relationship between emotional schemas and rumination.

Methods

Participants and Procedure

The participants in this study were nonclinical individuals, both male and female, aged 18 to 50 years, residing in Tehran. A voluntary sampling method was employed. Questionnaires were uploaded to the Porsline website, and participants who provided consent completed the measures after reporting their demographic information, including sex, education level, age, and residential area. Based on the residence information provided at the beginning of the questionnaires, the statistical population consisted of residents of Tehran, categorized into 4 regions: northern, southern, eastern, and western. Data were collected in 2021.

According to Kline's (22) recommendation, the minimum sample size for Structural Equation Modeling (SEM) is 200 participants. Additionally, he suggests estimating 5 to 10 participants for each parameter to be assessed. Considering the parameters of the research model, the sample size should range between 350 and 700 participants. Therefore, 578 individuals (381 females and 197 males) were recruited as the sample.

Cronbach’s alpha values exceeded 0.70, indicating acceptable internal consistency. Because the study involved a nonclinical population and no confidential information was collected, an ethics code was not required. Participants were assured that their responses would remain anonymous and confidential. All questionnaires were completed simultaneously.

Following Chou and Bentler (23), skewness values within ±3 were considered acceptable, while kurtosis values exceeding ±10 were indicative of problems . Chou and

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Bentler also suggest that a multivariate normality index value below 3 indicates adequate multivariate normality. Additionally, correlation coefficients above 0.85 may create difficulties in model estimation (23).

Measures

Ruminative Response Scale

The Ruminative Response Scale (RRS) is a self-report instrument designed to assess the trait of rumination. It is a subscale of the Response Styles Questionnaire (RSQ), developed by Nolen-Hoeksema and Morrow (1991) (24). The RSQ consists of 2 subscales: the RRS and the Distracting Response Scale (DRS). The RRS includes 22 items rated on a 4-point Likert scale (1 = never to 4 = almost always). Scores range from 22 to 88, with higher scores reflecting greater rumination. Reported Cronbach's alpha and test-retest reliability were 0.90 and 0.67, respectively (25). For the Persian version, the internal consistency of the brooding and reflection subscales was 0.79 and 0.69, respectively (26). In the present study, Cronbach's alpha for the total scale was 0.91.

The Persian Version of the Emotional Schemas Scale

Leahy (2002) (27) developed the Emotional Schemas Scale (LESS) to assess 14 emotional schemas, reporting Cronbach's alpha reliability of 0.81. The Persian version, adapted by Khanzadeh et al (2012) (28), includes 13 emotional schemas and 37 items. Subscales include emotional self-awareness, validation by others, comprehensibility, controllability, simplistic views of emotions, higher values, guilt, demands for rationality, consensus, acceptance of feelings, rumination, expression of feelings, and blame—all representing maladaptive emotional beliefs. Items are rated on a 5-point Likert scale (0 = completely disagree to 4 = agree entirely), resulting in a total score ranging from 0 to 148. Higher scores indicate stronger maladaptive emotional schemas. The Persian version demonstrated Cronbach's alpha of 0.82 for the total scale and 0.59–0.73 for subscales. In the present study, Cronbach's alpha was 0.84 for the total scale and 0.66–0.89 across subscales.

Emotional Flexibility Scale

The Emotional Flexibility Scale (EFS), developed by Rashid and Bayat (2019) (29), was used to measure emotional flexibility. The scale consists of 24 items rated on a 6-point Likert scale (1 = strongly disagree to 6 = strongly agree). Scores range from 24 to 144, with higher scores reflecting greater emotional flexibility. Factor analysis identified 3 subscales: positive emotion regulation, negative emotion regulation, and emotional communication. The original study reported Cronbach's alpha of 0.866. In the present study, Cronbach's alpha for the overall scale was 0.88, with subscale reliabilities of 0.80, 0.73, and 0.74, respectively.

Data Analysis

A 2-step SEM approach, as proposed by Anderson and Gerbing (30), was applied. First, confirmatory factor analysis (CFA) was conducted to examine the validity and reliability of the study measures. Then, the hypothesized structural model was tested using SEM with LISREL 8.85 software. Before evaluation, SEM assumptions were checked. Model estimation was performed using maximum likelihood estimation (MLE).

Model fit was assessed using multiple indices, with the following cutoff criteria (23): chi-square (χ^2), root mean square error of approximation (RMSEA; good fit ≤ 0.06), standardized root mean square residual (SRMR; good fit ≤ 0.08), goodness-of-fit index (GFI; good fit ≥ 0.90), comparative fit index (CFI; good fit ≥ 0.90), normed fit index (NFI; good fit ≥ 0.90), and incremental fit index (IFI; good fit ≥ 0.90) (Table 1).

The results (Table 1) demonstrate that the model fits the data well, indicating that the observed variables adequately represent the latent constructs. Evaluation of the structural model also showed good fit, with all indices falling within the acceptable range.

Results

Participants

The final sample consisted of 578 participants, including 197 males (34.1%) and 381 females (65.9%). The mean age for males was 28 years (SD = 8.52), and for females, 25 years (SD = 6.89). Regarding educational attainment, 0.7% (n = 4) had primary education, 2.4% (n = 14) had a cycle degree, 19.9% (n = 115) held a diploma, 9% (n = 52) had an associate degree, 43.6% (n = 252) held a bachelor's degree, 18% (n = 104) had a master's degree, and 6.4% (n = 37) had a doctoral degree. Geographically, 11.4% (n = 66) resided in southern Tehran, 18.7% (n = 108) in the east, 16.6% (n = 96) in the north, 31.3% (n = 181) in the west, and 22.0% (n = 127) in the central region.

Preliminary analyses examined the SEM assumptions before model estimation. Univariate normality was assessed through skewness (ranging from -0.488 to 0.378) and kurtosis (ranging from -0.720 to 0.557), indicating acceptable normality. Multivariate normality was confirmed with a relative multivariate kurtosis index of 1.12. The correlation matrix showed coefficients ranging from -0.15 to 0.64, with none exceeding problematic thresholds, confirming the suitability of the data for SEM using MLE.

Descriptive Statistics and Correlations

Table 1 presents the correlation matrix, means, and

Table 1. Descriptive Statistics and Correlation Matrix among research variables

	Variable	1	2	3	Mean	Standard Deviation
1	Emotional Schemas	1			60.820	15.060
2	Emotional Flexibility	- 0.234	1		92.260	17.220
3	Rumination	0.397	- 0.126 **	1	42.020	9.420

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standard deviations of the study variables. Emotional schemas exhibited a significant negative correlation with emotional flexibility ($P \leq 0.001$) and a significant positive correlation with rumination ($P \leq 0.001$). Emotional flexibility was found to have a significant negative correlation with rumination ($P \leq 0.001$).

Model Fit

The goodness-of-fit indices indicated acceptable fit for both the measurement model (χ^2/df = 4.66, CFI = 0.95, NFI = 0.95, RMSEA = 0.064, GFI = 0.90, IFI = 0.95, SRMR = 0.052) and the structural model (χ^2/df = 4.44, CFI = 0.94, NFI = 0.92, RMSEA = 0.069, GFI = 0.89, IFI = 0.94, SRMR = 0.056), supporting the adequacy of the proposed models.

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Measurement Model (Confirmatory Factor Analysis)

Confirmatory factor analysis (CFA) was used to evaluate the suitability of indicators for each latent variable. The subscales of the Ruminative Response Scale and the Emotional Flexibility Scale had factor loadings above 0.30 and were retained. For the Emotional Schemas Scale, subscales such as expression of feelings, validation by others, and comprehensibility had loadings below 0.30 and were excluded. The remaining subscales, with loadings above 0.30, were retained as observable variables. The final measurement model, tested simultaneously, confirmed that the selected indicators reliably represented their corresponding latent constructs (Table 2).

Structural Model: Direct and Indirect Effects

Figure 1 illustrates the hypothesized structural model with standardized path coefficients. Emotional schemas,

Table 2. Non-standardized and Standardized Coefficients, along with T-values for Observed Variables in the Measurement Model

Variable	Dimensions	Non-standardized Coefficient	Standardized Coefficient (Factor loading)	T-value	*P*-value	SE
Emotional	rumination	1.34	0.56	13.59	< 0.001	0.1
Schemas0.07	emotional self-awareness	1.64	0.61	15.08	< 0.001	0.11
	guilt	1.69	0.60	15.00	< 0.001	0.11
	controllability	1.55	0.56	13.60	< 0.001	0.11
	blame	1.08	0.60	15.01	< 0.001	0.07
	demands rationality	2.22	0.69	17.71	< 0.001	0.13
	simplistic views of emotions	0.93	0.53	12.94	< 0.001	0.07
	higher values	0.90	0.50	11.89	< 0.001	0.08
	Acceptance of feeling	1.30	0.65	16.42	< 0.001	0.08
	Consensus	1.24	0.68	17.41	< 0.001	0.07
Emotional	negative emotion regulation	5.92	0.91	24.78	< 0.001	0.24
Flexibility	positive emotion regulation	5.75	0.70	18.13	< 0.001	0.32
	Emotional communication	4.04	0.78	20.43	< 0.001	0.2
Rumination	Focus on the symptoms of depression	5.13	0.98	16.49	< 0.001	0.31
	reflection and brooding	3.14	0.58	12.00	< 0.001	0.26

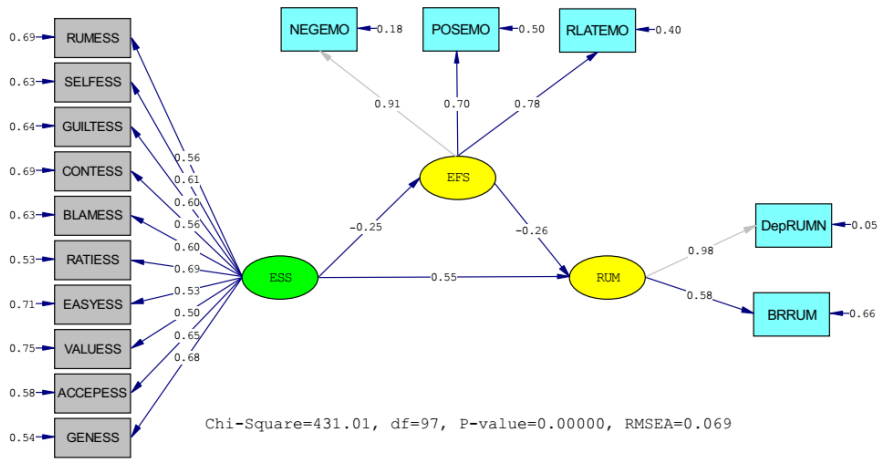

Figure 1. The research structural model accompanied by standardized coefficients

Note. ESS= Emotional Schemas; EFS= Emotional Flexibility; RUM= Rumination; (RUM= rumination; SELF= emotional self-awareness; GUILT= guilt; CONT= controllability; BLAM= blame; RATI= demands rationality; EASY= simplistic views of emotions; VALU= higher values; ACCEP= Acceptance of feeling; GEN= Consensus;)= Subscale of Emotional Schemas; (NEG= negative emotion regulation; POS= positive emotion regulation; RLAT= Emotional communication;)= Subscale of Emotional Flexibility; (DEPRUM= Focus on the symptoms of depression; BRRUM= reflection and brooding) = Subscale of Rumination.

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Table 3. Bootstrap Test Results for Mediating Effects

Independent Variable	Mediating Variable	Dependent Variable	Standardized Coefficient	Standard Error	95% Lower Bound	95% Upper Bound	*P*-value
Emotional Schemas	Emotional Flexibility	Rumination	0.066	0.026	0.023	0.109	0.011

as the exogenous variable, significantly predicted emotional flexibility (β = -0.25, $P \leq 0.01$) and rumination (β = 0.55, $P \leq 0.01$). Emotional flexibility significantly predicted rumination (β = -0.26, $P \leq 0.01$). The determination coefficients for the latent variables were within acceptable ranges.

The bootstrap method was used to test the significance of mediating effects. Results (Table 3) confirmed that emotional flexibility significantly mediated the relationship between emotional schemas and rumination, as both bounds of the bootstrap confidence intervals were positive and excluded zero.

Mediation Analysis

Table 3 demonstrates that the effect of emotional schemas on rumination is mediated through emotional flexibility, and this relationship is statistically significant. This is supported by the bootstrap confidence intervals, which have both upper and lower bounds that are positive and exclude zero. Thus, emotional schemas have a significant and positive influence on rumination, with emotional flexibility serving as a mediator.

Discussion

This study aimed to examine variables contributing to the rumination process using a structural equation modeling approach. Considering the harmful effects of rumination on psychological and social functioning in both clinical and nonclinical populations, as well as its influential role across a wide range of psychological disorders, identifying factors that increase susceptibility to rumination is valuable for understanding and managing this process.

The findings indicated that maladaptive emotional schemas were positively associated with rumination. In contrast, reduced emotional flexibility increased the likelihood of engaging in rumination. Furthermore, emotional flexibility mediated the relationship between emotional schemas and rumination. These results supported all 3 research hypotheses.

Regarding the link between emotional schemas and rumination, the present findings are consistent with prior studies, which show that negative interpretations of emotions convey the idea that emotions are problematic, thereby leading to maladaptive coping strategies, such as rumination (7, 13). However, this study demonstrated that emotional flexibility plays a mediating role in this relationship. Emotional flexibility influences both emotional schemas and rumination, thereby shaping how individuals regulate emotions and respond to situational demands.

Three main dimensions of emotional flexibility are particularly relevant: the capacity to use and modify emotion regulation strategies, the sensitivity of spontaneous emotional responses, and flexibility in evaluating events and emotional experiences (27). Maladaptive emotional schemas, which reflect deficits in emotional processing, avoidant coping, ineffective emotion regulation, and behavioral dysregulation, contribute to emotional inflexibility. Such inflexibility plays a critical role in shaping emotional experiences and functioning (20). The present results are consistent with earlier research linking maladaptive emotional schemas to reduced emotional flexibility, demonstrating that negative beliefs and evaluations of emotional experiences hinder the ability to generate, manage, and regulate emotions effectively.

An imbalance in the components of emotional flexibility may contribute to symptoms such as repetitive negative thoughts, persistent negative mood, and behaviors that maintain disorders, such as social withdrawal (16). Two specific forms of emotional inflexibility—rumination and resistance to emotional change (emotional inertia)—are closely associated with mental health problems (21). Thus, when individuals lack flexibility in managing emotions according to situational demands, they are more likely to experience emotional rigidity, persistence of negative emotional states, and a greater tendency to become stuck in the cycle of rumination.

Taken together, these findings suggest that maladaptive emotional schemas increase rumination, while emotional flexibility not only directly reduces rumination but also mediates the relationship between emotional schemas and rumination. Although limited research has explored this mediating role, the current study provides novel evidence that broadens the understanding of how emotional variables interact in the rumination process.

Limitations

This study has several limitations that should be taken into account when interpreting the results. First, the use of a non-random sampling method limits the generalizability of the findings. Second, the sample included a higher proportion of women than men, which may affect the representativeness of the results. Third, as the study involved nonclinical participants, the findings may not extend to clinical populations or directly inform interventions for individuals experiencing psychological disorders. Finally, data were collected online, which prevented control over how participants completed the questionnaires and potentially influenced response validity.

Suggestions

Future research should include longitudinal designs and clinical samples to enhance the generalizability and clinical applicability of findings. Employing random sampling methods would strengthen the representativeness of results. Additionally, using face-to-face data collection instead of online administration could improve response

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validity. Future studies might also incorporate other emotional and cognitive variables related to rumination into structural equation models, which could help clarify the broader processes involved in the development, maintenance, and treatment of rumination and related disorders.

Conclusion

Nonadaptive emotional schemas, arising from maladaptive interpretations of emotional experiences, reduce individuals' ability to regulate negative emotions adaptively. This emotional incompatibility impairs the capacity to control, inhibit, and modify emotional states in accordance with situational demands, thereby increasing emotional inflexibility. As a result, individuals are more likely to become trapped in repetitive negative thinking cycles, such as rumination.

The findings highlight the importance of considering both emotional schemas and emotional flexibility in understanding and addressing rumination. Interventions that aim to correct maladaptive emotional schemas while enhancing emotional flexibility may help prevent and manage rumination. These results provide valuable insights for future research and potential clinical applications.

Authors' Contributions

All authors contributed equally to the conception, design, analysis, and writing of this study.

Ethical Considerations

As the study involved a nonclinical population and did not collect confidential information, formal ethical approval was not required. Participants were assured that their responses would remain completely anonymous and confidential.

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Conflict of Interests

The authors declare that they have no competing interests.

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