



Rumination and Mental Health in Indonesian Adults: The Mediating Roles of Anxiety and Depression

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ABSTRACT

Rumination is one of the many psychological factors that worsen mental health. Based on that, this study aims to analyze the relationship between rumination and anxiety, depression, suicidal tendencies, and overall mental health in individuals aged 18–50 years. Rumination is a repetitive thought pattern that focuses on negative emotions without generating adaptive solutions, potentially worsening psychological conditions. The research method used a quantitative approach with a correlational design. A sample of 129 participants was purposively recruited and completed an online questionnaire consisting of the

Ruminative Response Scale (RRS), Beck Anxiety Inventory (BAI), Beck Depression Inventory (BDI), Suicidal Ideation Scale (SIS), and General Health Questionnaire (GHQ). Data analysis included Spearman correlation, linear regression, and mediation analysis. The results showed that rumination was significantly positively correlated with depression ($\rho = 0.603$, $p < 0.001$), anxiety ($\rho = 0.604$, $p < 0.001$), and suicidal ideation ($\rho = 0.370$, $p < 0.001$), but not significantly with global mental health ($\rho = 0.105$, $p = 0.236$). Mediation analysis showed that depression and anxiety fully mediated the relationship between rumination and mental health. These results indicate that the impact of rumination on psychological well-being occurs primarily through increased affective and cognitive symptoms.

1. INTRODUCTION

Rumination is a repetitive and passive pattern of thinking characterized by a persistent focus on negative emotions and distressing personal experiences. Rather than facilitating adaptive problem-solving, this cognitive style traps individuals in cycles of repetitive self-focused thought that prolong negative affect and interfere with effective emotional regulation (Wisco et al., 2018). Conceptually, rumination is grounded in Nolen-Hoeksema's Response Styles Theory, which proposes that repetitive attention to negative mood states maintains and intensifies emotional distress instead of promoting behavioral engagement or cognitive restructuring (Nolen-Hoeksema & Morrow, 1991). Subsequent work further distinguished two forms of rumination: brooding, a maladaptive pattern of passive comparison and negative self-focus, and reflection, a more deliberate form of introspection that may occasionally facilitate adaptive insight in nonclinical contexts (Treynor et al., 2003). Among these dimensions, brooding has consistently demonstrated stronger associations with emotional dysregulation and the development of psychopathology, highlighting rumination as a transdiagnostic cognitive vulnerability rather than a disorder-specific phenomenon.

Among the psychological conditions associated with rumination, depression has received the greatest empirical attention. Individuals who habitually engage in repetitive negative thinking are more likely to experience persistent sadness, hopelessness, diminished motivation, and impaired problem-solving abilities. Response Styles Theory proposes that rumination maintains depressive episodes by repeatedly directing attention toward negative emotional experiences while discouraging active coping strategies (Nolen-Hoeksema & Morrow, 1991). Consistent with this perspective, numerous studies have demonstrated that rumination is one of the strongest cognitive predictors of depressive symptoms and contributes to both the onset and maintenance

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of depressive disorders (McLaughlin & Nolen-Hoeksema, 2011; Wisco et al., 2018). These findings position depression as one of the primary psychological outcomes through which the detrimental effects of rumination become evident.

Although historically investigated within depression research, rumination has increasingly been recognized as an important cognitive vulnerability for anxiety disorders. Unlike worry, which is generally future-oriented, rumination focuses on repetitive evaluation of past or present emotional experiences, yet both processes share common mechanisms involving repetitive negative thinking and impaired emotional regulation (McLaughlin & Nolen-Hoeksema, 2011; Wisco et al., 2018). Persistent rumination amplifies perceived threat, increases emotional reactivity, and reduces cognitive flexibility, making individuals more susceptible to anxious symptoms. Consequently, contemporary transdiagnostic models regard rumination as a shared cognitive mechanism underlying both depression and anxiety rather than a process unique to depressive disorders.

Rumination has also been consistently associated with suicidal ideation. Repeated self-focused negative thinking reinforces feelings of defeat, hopelessness, and entrapment while reducing individuals' ability to generate alternative solutions during periods of emotional distress. As these maladaptive cognitive patterns accumulate, suicidal thoughts may become increasingly accessible as perceived avenues of escape. Empirical evidence indicates that brooding, in particular, is strongly associated with suicidal ideation and suicide attempts, emphasizing the clinical significance of rumination beyond affective symptoms alone (Holdaway et al., 2018). Considering the growing concerns regarding suicide prevention globally and in Indonesia, understanding rumination as an upstream cognitive risk factor may contribute to earlier identification of individuals vulnerable to suicidal thinking.

Beyond specific psychological symptoms, rumination may also influence global mental health, which reflects an individual's overall psychological functioning, emotional well-being, and capacity to cope effectively with the demands of daily life. As operationalized by the General Health Questionnaire (GHQ), global mental health encompasses multiple domains of psychological adjustment, including emotional distress, social functioning, and general psychological well-being rather than focusing on a single psychiatric condition (Goldberg, 1972; Habibi Asgarabad et al., 2023). Persistent rumination may gradually undermine these broader dimensions of functioning by sustaining emotional distress, impairing concentration, reducing interpersonal effectiveness, and limiting adaptive coping (McLaughlin & Nolen-Hoeksema, 2011). Examining global mental health alongside depression, anxiety, and suicidal ideation therefore provides a more comprehensive understanding of how repetitive negative thinking affects psychological functioning across multiple domains rather than within a single disorder.

Taken together, these findings suggest that rumination is not merely associated with a single psychological disorder but functions as a broad transdiagnostic cognitive vulnerability influencing multiple dimensions of mental health. Its associations with depression, anxiety, suicidal ideation, and global psychological functioning indicate that repetitive negative thinking may represent a common mechanism underlying diverse emotional difficulties. Understanding why rumination exerts such widespread effects, however, requires moving beyond descriptive associations toward cognitive and neurobiological frameworks that explain the mechanisms through which these psychological outcomes emerge.

Although rumination has traditionally been conceptualized as a cognitive response style, contemporary theories increasingly emphasize the underlying cognitive control processes that sustain repetitive negative thinking. The impaired disengagement hypothesis proposes that individuals who ruminate experience persistent difficulty disengaging their attention from negative emotional information, thereby prolonging emotional distress and limiting adaptive cognitive reappraisal (Koster et al., 2011). Similarly, the attentional scope model suggests that negative affect narrows attentional focus, reducing cognitive flexibility and increasing the likelihood that individuals become trapped in repetitive self-referential thoughts (Aj & Ih, 2013). Although rumination and worry differ in temporal orientation, rumination primarily concerns past or present emotional experiences, whereas worry is generally future-oriented and both represent forms of repetitive negative thinking characterized by impaired attentional control and

persistent cognitive engagement with emotionally salient information (McLaughlin & Nolen-Hoeksema, 2011; Wisco et al., 2018). Collectively, these cognitive frameworks suggest that rumination is maintained by deficits in attentional regulation and cognitive flexibility, providing a plausible explanation for its broad associations with depression, anxiety, suicidal ideation, and impaired global mental health.

These cognitive accounts are further supported by converging evidence from cognitive neuroscience. Neuroimaging studies have consistently associated rumination with hyperactivation of the default mode network (DMN), a large-scale brain network involved in self-referential processing, accompanied by reduced functional coordination with the central executive network (CEN) and impaired switching mediated by the salience network (SN) (Hamilton et al., 2011, 2015; Menon, 2011). Such alterations may hinder individuals' ability to disengage from internally generated negative thoughts and flexibly allocate attention toward external goal-directed activities. Complementing these findings, predictive processing and computational models propose that rumination reflects maladaptive affective predictions that become increasingly resistant to updating by incoming information, reinforcing persistent negative self-referential beliefs and emotional distress (Badcock et al., 2017; Barrett, 2017). Together, these cognitive and neurobiological perspectives provide a coherent mechanistic framework explaining why rumination functions as a transdiagnostic vulnerability that contributes to multiple adverse mental health outcomes, rather than being uniquely associated with a single psychological disorder.

While these cognitive and neurobiological mechanisms help explain how rumination contributes to emotional distress, their manifestation is also shaped by developmental, sociocultural, and environmental contexts. Young adulthood and middle adulthood represent critical developmental periods characterized by major life transitions, including higher education, workforce entry, career advancement, family formation, and increasing financial responsibilities. These transitions often require substantial cognitive and emotional adaptation while exposing individuals to heightened academic, occupational, interpersonal, and economic stress. At the same time, frequent engagement with social media may intensify social comparison and negative self-evaluation, further reinforcing ruminative thinking patterns (Fox & Moreland, 2015). Developmentally, brooding has been consistently associated with greater emotional dysregulation and elevated suicidal ideation and suicide attempts (Holdaway et al., 2018), suggesting that individuals within this age range may be particularly vulnerable to the cumulative psychological consequences of persistent rumination.

Beyond developmental influences, the expression and persistence of rumination are also shaped by sociocultural environments. In collectivistic societies such as Indonesia, cultural values emphasizing emotional restraint, interpersonal harmony, and conflict avoidance may unintentionally encourage individuals to internalize emotional distress rather than express it openly or seek professional support. Limited mental health literacy, persistent stigma surrounding psychological disorders, and substantial treatment gaps further reduce help-seeking behaviors, allowing repetitive negative thinking to persist without appropriate intervention (WHO, 2022). Consequently, cognitive vulnerabilities such as rumination may interact with these sociocultural conditions to amplify depression, anxiety, suicidal ideation, and broader impairments in psychological functioning across diverse population groups, consistent with its role as a transdiagnostic cognitive vulnerability (McLaughlin & Nolen-Hoeksema, 2011).

The public health implications of these processes are substantial. Depression and anxiety remain among the leading contributors to disability-adjusted life years (DALYs) worldwide and impose considerable social and economic burdens (Fan et al., 2025). Mental disorders are projected to become one of the leading contributors to the global burden of disease, with annual economic losses estimated to reach USD 6 trillion by 2030 (D. E. Bloom et al., 2011; WHO, 2022). Beyond increasing emotional distress, persistent rumination may impair concentration, decision-making, occupational productivity, academic performance, interpersonal relationships, and overall quality of life (Lyubomirsky et al., 2003).

These consequences are particularly concerning in Indonesia and across Southeast Asia, where mental health treatment gaps frequently exceed 75–80%, mental health literacy remains

limited, and access to psychological services is uneven (WHO, 2022). Furthermore, concerns regarding suicidality have become increasingly prominent in Indonesia. The Indonesia National Adolescent Mental Health Survey (I-NAMHS) (Center for Reproductive Health, 2022) reported that 1.4% of adolescents experienced suicidal ideation within the previous 12 months, and more than 84% of those reporting suicidal thoughts also experienced mental health problems. Consistent with these findings, a nationally representative analysis of more than 636,000 Indonesian adults found that 0.87% reported persistent suicidal ideation in the past month, highlighting that suicidal thinking remains a significant public health concern across the lifespan despite likely underreporting due to stigma (Sujarwoto et al., 2026). Together with rapid urbanization, demographic transitions, and growing socioeconomic pressures, these findings underscore the importance of identifying modifiable cognitive risk factors, such as rumination, that can be targeted through early preventive interventions.

Identifying rumination as an upstream cognitive vulnerability therefore has implications that extend beyond individual clinical outcomes. Early identification and intervention targeting repetitive negative thinking may reduce emotional distress before it progresses into more severe depression, anxiety, suicidal ideation, and functional impairment, thereby contributing to Sustainable Development Goal (SDG) 3, particularly Target 3.4, which emphasizes the promotion of mental health and well-being and the reduction of premature mortality associated with mental disorders and suicide (WHO, 2022). From this perspective, understanding how rumination simultaneously relates to multiple dimensions of mental health is important not only for advancing psychological theory but also for informing scalable prevention strategies, cognitive-behavioral interventions, mental health literacy programs, and public health policies. Despite these theoretical, clinical, and public health implications, important empirical questions remain regarding how rumination influences multiple mental health outcomes within the Indonesian context.

Despite growing evidence that rumination functions as a transdiagnostic cognitive vulnerability, important empirical questions remain regarding its role across multiple domains of mental health, particularly within low- and middle-income countries such as Indonesia. Existing studies conducted in Indonesia have primarily examined the association between rumination and depressive symptoms or other single psychological outcomes, most often using student samples and simple correlational analyses. Consequently, little is known about how rumination simultaneously relates to anxiety, depression, suicidal ideation, and broader global mental health within the general adult population. This limitation restricts a comprehensive understanding of rumination as a shared cognitive mechanism underlying diverse manifestations of psychological distress and constrains the development of integrated prevention and intervention strategies.

The present study addresses these limitations by proposing an integrative framework that simultaneously examines the relationships between rumination and four complementary mental health outcomes: depression, anxiety, suicidal ideation, and global mental health. Rather than treating these outcomes as isolated psychological constructs, this study conceptualizes them as interconnected indicators reflecting the broader psychological consequences of repetitive negative thinking. Furthermore, by focusing on Indonesian adults aged 18–50 years, the study extends the existing literature beyond student-based samples and provides evidence from a population undergoing diverse developmental, occupational, familial, and socioeconomic transitions. By integrating multiple psychological outcomes within a single analytical framework, this study extends current understanding of rumination beyond disorder-specific perspectives and reinforces its role as a transdiagnostic cognitive mechanism underlying diverse mental health outcomes. The findings are expected to contribute not only to the growing literature on rumination as a transdiagnostic process but also to inform early mental health screening, cognitive-behavioral intervention development, and public health strategies aimed at promoting psychological well-being and suicide prevention in Indonesia.

Building upon these theoretical, empirical, and public health considerations, the present study investigates the relationships between rumination, depression, anxiety, suicidal ideation, and global mental health among Indonesian adults aged 18–50 years. In addition to examining the direct associations between rumination and each mental health outcome, the study also evaluates

whether depression and anxiety function as mediating mechanisms through which rumination contributes to overall mental health. By integrating these relationships within a single analytical framework, this study aims to advance the understanding of rumination as a transdiagnostic cognitive mechanism while providing evidence to support early mental health screening, targeted cognitive-behavioral interventions, and public health policies that promote psychological well-being and suicide prevention in Indonesia. This integrated analytical approach enables simultaneous evaluation of both direct and indirect pathways linking rumination to overall mental health.

Based on theoretical frameworks and empirical findings, the present study formulates the following hypotheses:

H1: Higher levels of rumination will be associated with higher levels of depression.

H2: Higher levels of rumination will be associated with higher levels of anxiety.

H3: Rumination will positively predict suicidal ideation.

H4: Rumination will negatively predict global mental health.

H5: Depression will mediate the relationship between rumination and mental health.

H6: Anxiety will mediate the relationship between rumination and mental health.

2. METHOD

This study employed a quantitative correlational research design to examine the associations among rumination, anxiety, depression, suicidal ideation, and overall mental health in Indonesian adults. A correlational approach was selected because the aim of the study was to identify predictive patterns and indirect pathways among psychological variables rather than to establish causal relationships. In addition to examining direct associations, the study incorporated mediation analysis to evaluate whether anxiety and depression functioned as indirect mechanisms linking rumination to overall mental health. All data were collected through online self-report instruments administered via a secure digital survey platform (SurveyMonkey). Online administration was selected to maximize accessibility, geographical reach, and participant anonymity, particularly given the sensitive nature of the assessed constructs, including depressive symptoms and suicidal ideation.

A total of 129 participants aged 18 to 50 years were recruited using purposive sampling. This age range was selected to capture early, middle, and late adulthood, developmental periods characterized by increasing educational, occupational, familial, and financial responsibilities that may heighten exposure to psychosocial stressors and interact with ruminative tendencies. Inclusion criteria consisted of: (a) being between 18 and 50 years of age; (b) being fluent in the Indonesian language; and (c) not undergoing active psychological or psychiatric treatment at the time of participation. Exclusion criteria included incomplete questionnaire responses and response patterns indicating insufficient attention (e.g., straight-lining or identical responses across all questionnaire items).

Participants were recruited through online announcements disseminated via WhatsApp groups, Instagram, Facebook, community networks, and university mailing lists. Participation was voluntary, and all respondents provided electronic informed consent before completing the survey. No monetary or material incentives were provided. To minimize invalid responses, the online survey prevented duplicate submissions through SurveyMonkey settings. All submitted questionnaires were subsequently screened for completeness, response consistency, and potential inattentive responding before inclusion in the final dataset.

Sample size estimation was conducted a priori using G*Power version 3.1 (Faul et al., 2009). The calculation was based on a linear multiple regression model (fixed model, R^2 deviation from zero) with one predictor, assuming a medium effect size ($f^2 = .15$; (Cohen, 1988), a significance level of $\alpha = .05$, and statistical power $(1 - \beta) = .80$. The analysis indicated a minimum required sample size of 55 participants. The final sample of 129 participants therefore exceeded this requirement, providing adequate statistical power to detect medium-sized effects in both the regression and subsequent mediation analyses.

All self-report instruments were administered in the Indonesian language. The Ruminative Response Scale (RRS) was translated into Indonesian by the research team using a forward-backward translation procedure to ensure semantic equivalence with the original instrument. The Beck Anxiety Inventory (BAI), Beck Depression Inventory-II (BDI-II), and General Health Questionnaire-12 (GHQ-12) were administered using existing Indonesian-language versions that are widely used in psychological research and clinical practice in Indonesia. The Suicidal Ideation Scale (SIS) was administered using the Indonesian version developed and psychometrically validated by Fitriana et al., (2022). Internal consistency reliability for all instruments was evaluated in the present sample using Cronbach's alpha.

Rumination was assessed using the Ruminative Response Scale (Nolen-Hoeksema & Morrow, 1991). The instrument consists of 22 items rated on a Likert scale measuring individuals' tendencies to engage in repetitive negative thinking in response to emotional distress. Although the scale comprises two subdimensions (brooding and reflection), the total score was used in the present study to represent overall rumination. Previous studies have reported excellent psychometric properties (Cronbach's α ranging from .88 to .92), and internal consistency in the present sample was $\alpha = .91$.

Anxiety symptoms were measured using the 21-item Beck Anxiety Inventory (Beck et al., 1988), which measures both cognitive and somatic manifestations of anxiety. Participants rated symptom severity using a four-point Likert scale. Previous studies have demonstrated high internal consistency ($\alpha = .88-.92$). Internal reliability in the present study was $\alpha = .90$.

The 21-item BDI-II (Beck et al., 1996) was used to assess depressive symptoms, including affective, cognitive, and physiological components. The instrument contains 21 items and responses are scored on a four-point severity scale. Previous studies have consistently demonstrated excellent reliability ($\alpha \approx .90$). Cronbach's alpha in the present sample was .89.

Suicidal ideation was assessed using the Suicidal Ideation Scale adapted and validated for the Indonesian population (Fitriana et al., 2022). The instrument measures the frequency, intensity, and controllability of suicidal thoughts and has demonstrated satisfactory psychometric properties within Indonesian populations. Internal consistency in the present study was $\alpha = .87$.

Overall mental health was measured using the 12-item General Health Questionnaire (Goldberg, 1972), which evaluates general psychological functioning, psychological distress, and impaired daily functioning. The GHQ-12 has demonstrated good psychometric performance across diverse cultural settings, including recent validation studies (Habibi Asgarabad et al., 2023). Internal consistency in the present sample was $\alpha = .85$.

Data collection was conducted online over a two-month period. Participants accessed the survey via a secure SurveyMonkey link and were first presented with an electronic informed consent form explaining the purpose of the study, voluntary participation, confidentiality, and the right to withdraw at any time without penalty. After providing consent, participants completed demographic questions followed by the psychological questionnaires.

Upon completion of the survey, participants received individualized psychological report cards summarizing their questionnaire scores, together with information regarding available psychological support services and mental health resources. This procedure was implemented to ensure appropriate ethical safeguards given the inclusion of sensitive measures, particularly suicidal ideation. The study was approved by the KEPK FK Unsoed with Ethical Approval No. 085/KEPK/PE/VII/2025 and was conducted in accordance with the ethical principles of the Declaration of Helsinki Code of Conduct.

Statistical analyses were performed using Jamovi version 2.3.28. First, descriptive statistics were calculated to summarize participants' demographic characteristics and the distributions of all study variables, including measures of central tendency and variability. Second, Spearman's rank-order correlation coefficients were computed to examine bivariate associations among rumination, anxiety, depression, suicidal ideation, and global mental health. Spearman's correlation was selected because preliminary assumption testing indicated that several variables deviated from a normal distribution, making this non-parametric approach more appropriate for assessing monotonic relationships among the study variables. Third, simple linear regression analyses were conducted to evaluate the predictive contribution of rumination to each mental

health outcome by estimating the magnitude and direction of these associations. Finally, mediation analyses were conducted using the MedMod module in Jamovi. Indirect effects were estimated using ordinary least squares (OLS) regression combined with a non-parametric bootstrapping procedure with 5,000 resamples. Bootstrapping was selected because it provides robust confidence interval estimates for indirect effects without assuming normality of the sampling distribution. Indirect effects were considered statistically significant when the 95% bootstrap confidence interval did not include zero. Statistical significance for all analyses was established at $p < .05$.

3. RESULT AND DISCUSSION

Result

Table 1 presents the descriptive statistics for all study variables, including rumination, depressive symptoms, anxiety, suicidal ideation, and global mental health. Rumination scores ($M = 53.2$, $SD = 12.5$) fell within the moderate range, indicating that participants generally experienced consistent engagement in repetitive negative thinking. Depressive symptoms ($M = 11.8$, $SD = 7.77$) and anxiety symptoms ($M = 5.71$, $SD = 3.90$) showed positively skewed distributions, suggesting that most participants reported minimal to mild affective symptoms, with a smaller proportion exhibiting moderate to severe levels. Suicidal ideation ($M = 11.7$, $SD = 3.88$) demonstrated an even more pronounced skew, indicating that severe suicidal thoughts were uncommon in this community sample. The GHQ scores ($M = 17.1$, $SD = 3.81$) approached a near-normal distribution, consistent with patterns observed in general population studies.

Table 1. Descriptive Statistics

	RRS	BDI	DASS	SIS	GHQ
N	129	129	129	129	129
Mean	53.2	11.8	5.71	11.7	17.1
SD	12.5	7.77	3.90	3.88	3.81
Distribution	Normal	Right Skew	Right Skew	Extreme Skew	Almost Normal

The distributional characteristics informed the analytic strategy, specifically, due to the presence of non-normality in several variables, non-parametric analyses (Spearman's ρ) were applied in the correlational stage.

Table 2. Correlation Analysis

	ρ Spearman	p-value	Interpretation
RRS - BDI	0.603	< .001	Significant
RRS - DASS	0.604	< .001	Significant
RRS - SIS	0.370	< .001	Significant

RRS - GHQ	0.105	0.236	Not Significant
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Spearman rank-order correlations were computed to assess the associations between rumination and the four mental health indicators (Table 2). Rumination showed strong and statistically significant positive correlations with depressive symptoms ($\rho = .603$, $p < .001$) and anxiety symptoms ($\rho = .604$, $p < .001$). These coefficients fall within the medium-to-large range, suggesting that increases in ruminative thought patterns are robustly associated with elevated negative affect.

A moderate but statistically significant correlation was also found between rumination and suicidal ideation ($\rho = .370$, $p < .001$), indicating that individuals who ruminate more frequently are more likely to report experiencing suicidal thoughts. In contrast, rumination was not significantly associated with global mental health as measured by the GHQ ($\rho = .105$, $p = .236$), suggesting that rumination may be more strongly tied to specific affective symptoms than to general psychological functioning. These results collectively support the hypothesis that rumination is a transdiagnostic correlate of emotional distress.

Table 3. Regression Analysis

DV	β (Estimate)	r^2	p-value	Interpretation
Depresi	0.372	.359	< .001	Significant– Rumination↑ → Depression↑
Kecemasan	0.187	.361	< .001	Significant– Rumination↑ → Anxiety↑
Ideasi Bunuh Diri	0.105	.115	< .001	Significant but weak effect
Global Mental Health	0.027	.008	0.308	Not Significant

To further examine the predictive role of rumination, a series of linear regression analyses were conducted with depression, anxiety, suicidal ideation, and global mental health as dependent variables (Table 3). Rumination significantly predicted depressive symptoms ($\beta = .372$, $p < .001$), explaining 35.9% of the variance ($R^2 = .359$). This indicates that rumination is a substantial predictor of depressive affect in the sample.

Rumination also significantly predicted anxiety symptoms ($\beta = .187$, $p < .001$), accounting for 36.1% of the variance ($R^2 = .361$). Although the standardized beta coefficient was smaller than that observed for depression, the model's R^2 remains comparable due to shared variance with other emotional indicators. For suicidal ideation, rumination remained a significant predictor ($\beta = .105$, $p < .001$), although the effect size was relatively weak. This finding is consistent with prior research suggesting that rumination may contribute to ideation indirectly through its effects on depression and hopelessness. In contrast, rumination did not significantly predict global mental health as measured by the GHQ ($\beta = .027$, $p = .308$), aligning with the nonsignificant correlation results.

Table 4. Mediation Analysis

Mediator	Indirect Effect (p)	Direct Effect (p)	Conclusion
Depression	0.047 (p=0.037)	p = 0.530	Full Mediation
Anxiety	0.043 (p=0.055)	p = 0.588	Full Mediation

Mediation analyses were conducted to determine whether depression and anxiety mediated the relationship between rumination and global mental health (Table 4). The indirect paths were tested using bias-corrected bootstrapping with 5,000 resamples. Depression emerged as a significant mediator (indirect effect = .047, $p = .037$), whereas the direct effect of rumination on mental health was non-significant ($p = .530$), indicating full mediation. This suggests that rumination affects mental health primarily through its contribution to depressive symptoms rather than exerting a direct effect. Anxiety demonstrated a similar pattern. Although the indirect effect (indirect effect = .043) approached significance ($p = .055$), the direct path remained non-significant ($p = .588$), indicating a conceptual full mediation. These results imply that the influence of rumination on global psychological functioning is conveyed through heightened negative affect rather than through direct cognitive interference. Taken together, these findings support a model in which rumination contributes to psychological distress by intensifying affective symptoms that subsequently reduce mental well-being.

Discussion

The present study identified robust positive associations between rumination and both depressive and anxious symptoms, and a moderate association with suicidal ideation. These findings reinforce the conceptualization of rumination as a core transdiagnostic cognitive vulnerability that amplifies negative affect and undermines adaptive problem-solving (McLaughlin & Nolen-Hoeksema, 2011); (Wisco et al., 2018). The mediation pattern observed—where depression and anxiety fully accounted for rumination's effect on global mental health—indicates that repetitive negative thinking primarily exerts its deleterious influence through affective escalation rather than through direct impairment in perceived general functioning.

Building on this initial pattern, the observed association between rumination and suicidal ideation warrants particular attention. Contemporary models of suicidality highlight the defeat-entrapment pathway, where individuals experience a subjective sense of no escape accompanied by diminished ability to imagine alternative futures. Rumination intensifies this pathway by repeatedly activating negative self-schemas and narrowing cognitive flexibility, thereby increasing cognitive constriction—one of the strongest cognitive predictors of suicidal crises (Holdaway et al., 2018). Thus, even moderate correlations with suicidal ideation are clinically significant: rumination contributes not only to heightened distress but also to reduced mental bandwidth for generating solutions during acute emotional states, making it a relevant target for early suicide-prevention efforts.

In addition to these cognitive pathways, emerging neurocognitive and predictive-processing accounts offer further explanation for why rumination intensifies suicidality risk. Repetitive negative thinking appears to strengthen maladaptive predictive priors related to hopelessness, self-blame, and anticipated failure, leading individuals to perceive negative outcomes as inevitable and alternative futures as implausible (Badcock et al., 2017); (Barrett, 2017). Within hierarchical predictive systems, these entrenched priors reduce the brain's sensitivity to corrective evidence, making it increasingly difficult for individuals to update beliefs about their own agency or the possibility of change. From a network-dynamics perspective, persistent rumination may also prolong DMN-dominant states and impair salience-network-driven switching toward task-positive or future-oriented modes (Hamilton et al., 2015b; Menon, 2011). This pattern restricts cognitive flexibility at precisely the moments when flexible, solution-oriented thinking is most needed to counteract suicidal urges. Developmental factors in young adults—such as heightened self-evaluative focus and still-maturing executive control—further compound this vulnerability by creating a neurocognitive environment in which negative predictions become tightly coupled with affective distress. Together, these mechanisms clarify how rumination can act as a catalyst that accelerates the transition from emotional suffering to suicidal cognition, supporting its relevance as an upstream target in suicide-prevention models (Holdaway et al., 2018).

The mediation findings provide valuable insight into how cognitive vulnerabilities translate into broader functional impairment. Rather than exerting immediate behavioral disruption, rumination appears to act as a latent amplifier whose downstream effects emerge only

after generating sufficient affective load. This aligns with Response Styles Theory, which proposes that rumination deepens and prolongs negative mood until it reaches a level that interferes with everyday functioning (Nolen-Hoeksema & Morrow, 1991). The present findings clarify why prior studies sometimes report direct associations with global functioning and sometimes do not: the consequences of rumination appear to materialize primarily through accumulated affective symptoms. This suggests that interventions designed to reduce rumination should target both cognitive style and the affective responses it generates to prevent broader declines in well-being.

Further, the delayed manifestation of rumination's impact is consistent with models of cumulative cognitive load, which propose that persistent negative thinking gradually consumes attentional and regulatory resources until a threshold of affective strain is reached (Brosschot et al., 2006; Ottaviani et al., 2013). In predictive-processing terms, repeated dwelling on negative content reinforces high-precision negative priors that increase the frequency and intensity of dysphoric states, progressively weakening the system's capacity to generate adaptive predictions or recruit regulatory networks ((Badcock et al., 2017; Barrett, 2017). Neurocognitively, prolonged rumination has been associated with sustained DMN engagement and reduced CEN recruitment, suggesting that the longer individuals remain in self-referential loops, the more difficult it becomes to mobilize cognitive control in daily activities (Hamilton et al., 2011b, 2015b). These slow-building mechanisms explain why rumination may initially appear behaviorally silent, only to precipitate widespread functional impairment once affective symptoms accumulate beyond compensatory capacity. Consequently, interventions should not only modify ruminative thinking patterns but also aim to interrupt the gradual accumulation of affective load—through attentional training, emotion-regulation strategies, or metacognitive approaches—to prevent the transition from subclinical distress to clinically significant decrements in global functioning (Aldao et al., 2016).

To fully understand why rumination so effectively amplifies depressive and anxious affect, two complementary theoretical perspectives are informative. The Perseverative Cognition Model argues that repetitive negative thinking prolongs physiological and psychological activation long after stressors have passed, producing sustained emotional arousal that heightens vulnerability to internalizing disorders (Brosschot et al., 2006). Meanwhile, predictive-processing and constructed-emotion accounts propose that rumination reinforces negative predictive priors—biasing perception and interpretation of ambiguous information toward threat or self-blame (Badcock et al., 2017; Barrett, 2017). Together, these theories suggest that rumination converts transient stress into persistent affective activation by both sustaining heightened arousal and shaping the predictions that guide emotional experience. This mechanistic synthesis aligns closely with the full mediation pattern found in this study, which indicates that rumination's impact on global mental health is expressed primarily through depressive and anxious symptomatology.

Beyond these established models, recent extensions of predictive and affective neuroscience further elucidate how rumination intensifies emotional distress. In hierarchical predictive systems, the brain constantly attempts to minimize prediction error by balancing incoming sensory or interoceptive signals with prior expectations (Badcock et al., 2017; Barrett, 2017). Rumination disrupts this balance by repeatedly simulating negative internal states, thereby increasing the precision assigned to dysphoric priors and diminishing the corrective influence of external evidence. At the same time, prolonged physiological arousal—characteristic of perseverative cognition—feeds back into these predictive loops by strengthening interoceptive cues associated with tension, fatigue, or threat, creating a self-reinforcing cycle in which bodily signals and cognitive predictions mutually amplify negative affect (Brosschot et al., 2006; Ottaviani et al., 2013). This interaction explains why ruminative individuals often report heightened emotional reactivity even in relatively neutral situations: their predictive system is tuned to anticipate—and therefore generate—negative emotional interpretations. Such mechanisms make intuitive sense of our mediation findings: if rumination continuously pushes the emotional system toward dysphoric equilibrium states, depression and anxiety become the primary channels through which these cognitive disturbances translate into broader impairment. In this way, the convergence of predictive and physiological dysregulation provides a compelling

account of why rumination's effects manifest indirectly yet powerfully through affective symptoms.

A clearer bridge between cognitive and affective mechanisms emerges when these accounts are integrated with large-scale neural network models. Menon's triple-network model identifies the salience network (SN) as the system responsible for flexibly switching between the default mode network (DMN; self-referential processing) and the central executive network (CEN; cognitive control) (Menon, 2011). When SN-mediated switching is disrupted, the brain becomes biased toward DMN-dominant states, maintaining internally focused, self-referential thinking even when external demands require attentional reorientation. Neurobiological evidence supporting this chain is consistent with the impaired disengagement hypothesis. Individuals high in rumination display difficulty shifting attention away from negative stimuli (Eh et al., 2011), and neuroimaging research shows increased DMN activity accompanied by reduced CEN recruitment among habitual ruminators (Hamilton et al., 2015b). Our behavioral results align with these neural patterns: rumination appears to exert its influence on global functioning only after prolonged emotional dysregulation, mirroring the time-delayed accumulation of affective impairment predicted by dynamic network switching models.

Developmental factors further illuminate why these mechanisms are particularly consequential for younger adults. Adolescence and emerging adulthood are characterized by heightened self-focus, identity exploration, and increased exposure to evaluative environments—all of which elevate the risk of forming ruminative habits. During this period, the DMN and limbic systems mature earlier than prefrontal control networks, creating a temporary imbalance where internal mentation becomes more intense but less regulated.

Cultural context shapes these mechanisms in meaningful ways. In collectivistic societies such as Indonesia, norms emphasizing emotional restraint, relational harmony, and avoidance of burdening others may reduce help-seeking behaviors and encourage more internalized forms of coping. When mental health stigma and limited access to services further restrict outward expression of distress, individuals may rely more heavily on repetitive internal processing, thereby magnifying ruminative cycles (Aldao et al., 2016; WHO, 2022). These cultural tendencies, combined with the cognitive vulnerabilities identified above, help explain why rumination is strongly associated with emotional difficulties among Indonesian young adults navigating academic, relational, and economic stressors.

At a broader macro-level, rumination's indirect effect on global functioning—via depression and anxiety—underscores its relevance to public health and economic productivity. In countries with substantial treatment gaps and workforce shortages, such as Indonesia and many Southeast Asian nations, persistent ruminative thinking may contribute to presenteeism, impaired concentration, emotional exhaustion, and reduced work performance, even in the absence of formally diagnosed disorders (Lyubomirsky et al., 2003; WHO, 2022). Given the well-documented economic and societal costs of common mental disorders, these subclinical yet pervasive cognitive processes represent a nontrivial source of productivity loss and functional burden (D. Bloom et al., 2012). Because rumination operates upstream of depression and anxiety as a transdiagnostic vulnerability factor, scalable preventive interventions targeting repetitive negative thinking may offer disproportionate public health benefits by reducing both individual suffering and downstream societal costs (Aldao et al., 2016; McLaughlin & Nolen-Hoeksema, 2011). Digital cognitive-behavioral modules, brief mindfulness-based programs, and school-based psychoeducation thus represent feasible and contextually appropriate models for low-resource settings seeking to narrow mental health treatment gaps (WHO, 2022).

These implications extend to the Southeast Asian region, where collectivistic social norms, high academic competition, socioeconomic precarity, and limited mental health literacy converge to encourage internalizing cognitive styles and reliance on repetitive self-focused coping. In this context, substantial treatment gaps—often exceeding 70–80%—mean that depressive and anxious symptoms frequently accumulate without formal intervention until they reach levels that significantly impair daily functioning, closely mirroring the indirect mediation pathway observed in this study (WHO, 2022). Conceptualizing rumination as a transdiagnostic cognitive vulnerability helps explain why affective distress may remain behaviorally silent for extended

periods before cascading into broader impairment (McLaughlin & Nolen-Hoeksema, 2011; WHO, 2022). Encouragingly, regional shifts toward community-based and scalable mental health strategies—including digital and school-based interventions—are well aligned with rumination-focused approaches that target upstream cognitive processes rather than downstream disorder categories (WHO, 2022). Framing rumination as a shared vulnerability across Southeast Asia further supports cross-country collaboration in the development of digital CBT platforms, mental health literacy initiatives, and youth-focused preventive programs that are culturally adaptable and resource-efficient.

Clinically, the findings support the use of CBT techniques that disrupt ruminative habits through cognitive restructuring and behavioral activation, as well as mindfulness and metacognitive approaches that target predictive biases and attentional inflexibility. Given the mediation pattern, interventions that simultaneously reduce rumination and alleviate depressive and anxious symptoms may produce the greatest gains in global mental health. Reliance on self-report measures may underrepresent symptoms such as suicidality due to stigma. Future work should integrate multimodal approaches—including ecological momentary assessment, neuroimaging, and physiological markers—to capture dynamic fluctuations in rumination and affect. Examining moderators such as cultural norms, digital media exposure, and social support would further clarify boundary conditions for these mechanisms.

In summary, this study identifies rumination as an upstream cognitive vulnerability whose effects on global mental health unfold predominantly through depression and anxiety. By synthesizing cognitive theories, predictive-processing models, and dynamic network-switching perspectives, the findings offer a coherent multilevel explanation for how repetitive negative thinking evolves into broader impairment. These insights highlight practical intervention targets suited to culturally diverse and low-resource contexts and underscore the need for scalable preventive approaches aligned with national and regional mental health priorities.

4. CONCLUSION

The present study provides empirical evidence that rumination functions as an upstream cognitive vulnerability associated with poorer global mental health primarily through its effects on depressive and anxious symptoms. The full mediation observed indicates that repetitive negative thinking does not directly impair overall mental health but instead contributes to emotional distress, which subsequently undermines broader psychological well-being. These findings highlight the central role of depression and anxiety as affective mechanisms linking rumination to reduced global mental health and reinforce the importance of considering rumination as an early cognitive risk factor rather than merely a correlate of emotional disorders.

A key contribution of this study lies in its transdiagnostic perspective on rumination. Rather than examining depression, anxiety, suicidal ideation, or global mental health as isolated outcomes, the study integrates these constructs within a single conceptual framework and demonstrates that the association between rumination and global mental health is primarily transmitted through depressive and anxious symptoms. This integrative approach extends existing evidence and reinforces the conceptualization of rumination as a transdiagnostic cognitive vulnerability underlying multiple dimensions of psychological functioning.

From a practical perspective, the findings underscore the importance of early identification and intervention targeting maladaptive ruminative thinking before it progresses into clinically significant emotional distress. Preventive strategies incorporating cognitive-behavioral, mindfulness-based, and metacognitive approaches may help reduce vulnerability to depression and anxiety and promote better psychological well-being among young adults. More broadly, these findings support preventive mental health initiatives aligned with Sustainable Development Goal (SDG) Target 3.4, which emphasizes the promotion of mental well-being and the prevention of common mental disorders.

Several limitations should be acknowledged. Because this study employed a cross-sectional design, causal relationships cannot be established, and the findings should therefore be interpreted with appropriate caution. Future longitudinal and experimental studies are needed to

clarify the temporal and causal relationships between rumination, emotional symptoms, and global mental health, as well as to evaluate the effectiveness of interventions specifically targeting rumination.

Ultimately, recognizing rumination as an early and modifiable cognitive vulnerability offers a promising opportunity for preventive mental health efforts. Intervening before repetitive negative thinking escalates into depression and anxiety may represent an effective strategy for improving long-term psychological well-being and reducing the burden of common mental disorders among young adults. Further research employing longitudinal designs is needed to confirm the causal direction between rumination and affective disorders. In addition, the development of cognitive-based and mindfulness-oriented intervention programs for adolescents and young adults is essential to help reduce ruminative tendencies and enhance psychological resilience.

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