DERLEME | REVIEW

Theories and Models of Rumination: A Review

Ruminasyon Teorileri ve Modelleri: Bir Gözden Geçirme

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Abstract

Recurrent and self-focused thinking patterns, often centered on personal difficulties and their implications, are a common feature across a range of psychological conditions. When these thought cycles become repetitive, passive, and difficult to disengage from, they may contribute to emotional distress and hinder recovery. Research has shown that such mental processes can intensify negative emotions, reduce cognitive flexibility, and impair effective problem-solving, yet they may also, in specific contexts, support adaptive reflection or goal re-evaluation. In order to understand the diverse roles these thought patterns play, multiple explanatory frameworks have been developed. These include mood-responsive approaches, models emphasizing goal pursuit and failure, theories focused on metacognitive regulation, and integrative perspectives combining cognitive, motivational, and neurobiological mechanisms. Each framework highlights different triggers and maintenance factors, ranging from stress exposure and emotional vulnerability to habitual thinking styles and executive control deficits. By bringing these perspectives together, it becomes possible to design more precise interventions that not only reduce maladaptive forms of repetitive thinking but also strengthen adaptive cognitive and emotional capacities. Furthermore, understanding the contextual factors that shift these thought patterns from maladaptive to adaptive can inform personalized therapeutic strategies. Ongoing research continues to explore how these frameworks can be applied to diverse populations, enhancing the effectiveness of interventions across clinical and non-clinical settings.

Keywords: Rumination, theoretical models, cognition, mental health

Öz

Kişisel sorunlar ve bunların olası sonuçları etrafında yoğunlaşan, tekrarlayıcı ve odaklanmış düşünce biçimleri, birçok psikolojik durumda ortak olarak görülen bir özelliktir. Bu düşünce döngüleri pasifleşip kopması zor bir hale geldiğinde, duygusal sıkıntıyı artırabilir ve iyileşme sürecini zorlaştırabilir. Araştırmalar, bu süreçlerin olumsuz duyguları şiddetlendirebildiğini, bilişsel esnekliği azalttığını ve etkili problem çözme becerilerini zayıflattığını; ancak bazı bağlamlarda uyumlu yansıtma veya hedefleri yeniden değerlendirme işlevi görebileceğini ortaya koymuştur. Bu düşünce biçimlerinin farklı yönlerini anlamak amacıyla pek çok açıklayıcı model geliştirilmiştir. Bunlar arasında duygudurum tepkilerine odaklanan yaklaşımlar, hedef belirleme ve başarısızlık süreçlerini öne çıkaran modeller, metabilişsel düzenlemeyi merkeze alan kuramlar ve bilişsel, motivasyonel ve nörobiyolojik etkenleri bir araya getiren bütünleştirici çerçeveler yer almaktadır. Her biri, stres faktörlerinden duygusal hassasiyete, alışkanlık haline gelmiş düşünme tarzlarından yürütücü işlev yetersizliklerine kadar farklı tetikleyici ve sürdürücü unsurları vurgular. Bu bakış açıları bir arada değerlendirildiğinde, yalnızca uyumsuz düşünce döngülerini azaltmakla kalmayıp aynı zamanda uyumlu bilişsel ve duygusal yetileri güçlendirecek daha hedefe yönelik müdahaleler tasarlamak mümkün hale gelir. Ayrıca, bu düşünce kalıplarını uyumsuzdan uyumluya dönüştüren bağlamsal faktörleri anlamak, kişiselleştirilmiş terapötik stratejiler geliştirilmesine yardımcı olabilir. Devam eden araştırmalar, bu çerçevelerin farklı popülasyonlara nasıl uygulanabileceğini araştırmaya devam ederek, klinik ve klinik dışı ortamlarda müdahalelerin etkinliğini artırmaktadır.

Anahtar kelimeler: Ruminasyon, kuramsal modeller, biliş, ruh sağlığı

Introduction

Rumination refers to a repetitive and passive focus on one's distress, its perceived causes, and its consequences, often accompanied by negative emotional states, such as sadness, anxiety, or hopelessness (Nolen-Hoeksema, 2000). Rather than serving as an active problem-solving process, it typically manifests as a persistent cognitive cycle in which individuals remain preoccupied with adverse experiences or troubling thoughts. Rumination is widely recognized as a transdiagnostic cognitive process contributing to the development, maintenance, and exacerbation of various psychiatric disorders, including depression, anxiety disorders, post-traumatic stress disorder, and substance use disorders (Edmondson, 2004; McLaughlin & Nolen-Hoeksema, 2011). Although traditionally viewed as maladaptive, recent research suggests that, under certain circumstances, rumination may have adaptive elements, such as promoting reflection or motivating constructive behavioral changes (Watkins, 2008; Yang & Li, 2020).

Numerous theories and models have been proposed to explain rumination's origins, persistence, and impact on mental health. These span affect-focused models, such as the Response Styles Theory (Nolen-Hoeksema, 1991), goal-oriented frameworks like the Goal Progress Theory (Martin & Tesser, 1996), metacognitive approaches exemplified by the Self-Regulatory Executive Function Theory (Wells & Matthews, 1996), and integrative perspectives, such as the H-EX-A-GO-N model (Watkins & Roberts, 2020). These approaches provide complementary insights into rumination's nature and its relevance for research and clinical practice. This review presents the principal theories and models of rumination, outlining their conceptual foundations, explanatory mechanisms, and significance in understanding rumination's role in mental health.

What is Rumination?

Rumination has been recognized since antiquity, mentioned in the writings of ancient Greek philosophers, including Aristotle. The term originates from the Latin word "rumen," referring to the first stomach compartment in ruminant animals. In a clinical context, the term was first used in the 17th century by the Italian anatomist Fabricius ab Aquapendente to describe regurgitation in animals. In psychiatry, ruminative thinking refers to repetitive, self-focused thoughts associated with negative emotions or experiences (Nolen-Hoeksema, 2000).

In psychiatric literature, rumination was initially described not as a feature of obsessive-compulsive disorder (OCD) but as a separate diagnostic entity, characterized by phobic and ruminative thought patterns known as the "phobic-ruminative state." Sir Aubrey Lewis regarded obsessive rumination as a subtype of obsessive phenomena, associating it with endless questioning (Insel, 2022). Rippere (1977) defined rumination as "persistent and repetitive thoughts that arise in response to negative mood". Cann et al. (2011) linked rumination to traumatic experiences, proposing that it may emerge in the aftermath of trauma. Martin and Tesser (1996) proposed a broader perspective, suggesting that ruminative thoughts may relate to the past, present, or future and concern both the self and others in the context of completed or unresolved events.

Individuals with ruminative traits often engage in recurring, self-critical thoughts, such as "Why can't I handle things better?," "Why can't I escape this situation?," or "What did I do to deserve this?," intensifying feelings of hopelessness (Lyubomirsky et al., 1999). Even when aware of potential solutions, dysfunctional cognitive patterns may prevent action (Lyubomirsky et al., 1999). This persistent inward focus can reduce social engagement, leading to isolation (Roelofs et al., 2010). The negative emotional content of rumination may adversely affect physical and mental health, contributing to psychiatric conditions, such as depression and anxiety disorders, as well as physical health problems, exacerbating emotional distress and compromising well-being (Edmondson, 2004).

Nolen-Hoeksema and Morrow (1991) proposed that early childhood experiences play a fundamental role in developing ruminative tendencies. Although studies have not consistently shown significant gender differences in rumination frequency, some findings suggest women may exhibit higher levels due to increased exposure to stressors, such as sexual trauma (Michl et al., 2013).

Rumination is also associated with personality traits. Individuals who are perfectionistic, concerned with social approval, pessimistic, or high in neuroticism tend to ruminate more (Block, 2010; Hamesch et al., 2014). At its core, rumination involves repeated focus on past negative experiences and future uncertainty (Nolan et al., 1998). Those with low self-esteem, who dwell on past failures and perceive themselves as inadequate, are more prone to ruminative thinking (Davis & Nolen-Hoeksema, 2000). These individuals often reanalyze events to find solutions but become trapped in repetitive cognitive loops (Lyubomirsky et al., 1999). Watkins and Moulds (2007) explained rumination through the theory of reduced concreteness, distinguishing between "concrete" (specific, situational) and "abstract"

(generalized, vague) thinking. Persistent abstract thinking can prolong negative experiences and increase vulnerability to psychiatric disorders.

Rumination is a transdiagnostic process implicated in the development and maintenance of various psychiatric disorders (McLaughlin & Nolen-Hoeksema, 2011). It is associated with depression following trauma, anxiety disorders, substance use disorders, eating disorders, and post-traumatic stress disorder (Memedovic et al., 2019). Moreover, rumination is a risk factor for suicidal behavior (Tang et al., 2021). Recent research has focused on rumination's relationship with depressive mood, but no standardized method exists for comprehensively assessing rumination, and its distinction from related constructs, such as emotion-focused coping, worry, or repetitive thought processes, remains unclear (Smith & Alloy, 2009). Numerous studies link rumination to negative emotional states and psychopathology (Kirkegaard Thomsen, 2006). However, Feldman et al. (2008) emphasized the importance of responses to positive affect in emotion regulation (Feldman et al., 2008). Positive psychology, developed by Seligman and Csikszentmihalyi (2000), focuses on strengthening psychological resources, such as self-acceptance, life satisfaction, purpose, positive relationships, environmental mastery, and autonomy (Seligman & Csikszentmihalyi, 2000).

Within this framework, the functional aspects of rumination have been explored. Yang and Li (2020) developed a rumination training program to reduce maladaptive rumination and enhance adaptive rumination, improving psychological adjustment (Yang & Li, 2020). Watkins (2008) proposed that rumination is a cognitive process observed in all individuals and may serve an adaptive role, especially as a coping strategy for traumatic experiences (Watkins, 2008). The Response Styles Theory (RST), introduced by Nolen-Hoeksema (1991), provided a foundation for understanding rumination's dimensions and inspired multiple models to identify subtypes and examine their similarities and differences with other cognitive processes.

Rumination Theories and Models

Response Styles Theory (RST)

Several theories have been developed to understand psychiatric disorders, particularly depression and anxiety. One of the most studied is the Response Styles Theory (RST), developed by Susan Nolen-Hoeksema (1991). RST explains the vulnerability of individuals with ruminative traits to psychiatric disorders. Rumination emerges as an automatic response to stimuli associated with a depressed mood (Watkins & Nolen-Hoeksema, 2014). While individuals differ in coping with negative affective experiences, rumination is defined as one such mechanism (Nolen-Hoeksema, 1991).

RST posits that ruminative thinking is not aimed at generating solutions but is a repetitive, passive, distress-focused cognitive pattern. Research links rumination to maladaptive cognitive processes, such as hopelessness, pessimism, inadequacy, and neuroticism (Insel, 2022). Its repetitive and passive nature, rather than its content, is the primary defining feature.

RST suggests that ruminative tendencies are shaped by personal characteristics and life experiences but does not fully explain differences in rumination levels between individuals (Watkins & Nolen-Hoeksema, 2014). As rumination's intensity and duration increase, depression may become more severe and prolonged, recovery may be delayed, and suicidal ideation may rise (Nolen-Hoeksema, 2000). Rumination also impairs problem-solving, reduces motivation, and causes concentration difficulties.

Individuals with ruminative traits tend to engage in anxiety-inducing thoughts, such as "Why me?," "Why am I so different?," or "Why can't I manage things?" (Papageorgiou & Wells, 2004). Rumination contributes to the onset, maintenance, and exacerbation of depressive symptoms (Nolen-Hoeksema, 2000) through several mechanisms:

1. Increased negative memories and thoughts: Rumination triggers depressive feelings, intensifying negative cognitions.
2. Reduced problem-solving ability: It fosters pessimism and fatalism, weakening the ability to generate effective solutions.
3. Decreased instrumental behaviors: Rumination limits functional actions, increasing stress levels.
4. Deterioration of social relationships: Chronic rumination causes interpersonal problems, resulting in a loss of social support.

These mechanisms explain how rumination reinforces the depressive cycle and highlight its detrimental effects on mental health. Rumination may increase the severity and duration of depressive episodes, contribute to their chronicity, and raise the likelihood of depressive episodes in individuals with neurotic traits (Papageorgiou & Wells, 2004).

Rumination on Sadness Theory

Building on RST, Conway et al. (2000) define rumination as "recurrent thoughts about sadness and situations associated with sadness" (Conway et al., 2000). These thoughts are negative, lack goal-directed function, do not contribute to problem-solving, and are intrusive, experienced individually without being shared. This model emphasizes rumination's harmful aspects and its adverse effects, conceptualizing it as a cognitive process managed independently without external support (Smith & Alloy, 2009).

Goal Progress Theory

According to the Goal Progress Theory (GPT), developed by Martin and Tesser (1996), rumination is not merely a reaction to a depressive mood but a process that develops when an individual fails to reach a valued goal (Martin & Tesser, 1996). Rumination is associated with unattainable goals rather than mere failure and is linked to perceived insufficient effort (Harkin et al., 2016). The accessibility of goal-related information facilitates problem-solving and motivates goal pursuit. Rumination indicates a goal hierarchy, and such individuals persist in working toward their aims (Schmidt & DeShon, 2009).

GPT proposes that individuals unable to achieve goals need to develop new strategies, reassess goal appropriateness, and redirect toward alternative objectives (Pomaki et al., 2009). Rumination is a self-regulatory mechanism guided by higher-level goals, fostering problem-solving and goal attainment. Individuals must possess two abilities:

1. Persisting toward goals despite challenges.
2. Disengaging from goals when necessary.

Failure to review goals, make changes, or avoid vague, overly challenging goals (e.g., "to be healthy") can transform rumination into a pathological process. GPT approaches rumination through cognitive, metacognitive, and motivational factors, emphasizing its multidimensional nature (Trincas et al., 2018).

Self-Regulatory Executive Function Theory (S-REF)

Integrating Beck's schema theory with information processing research, Wells and Matthews (1996) developed the Self-Regulatory Executive Function Theory (S-REF), proposing that metacognitions play a critical role in emotional disorders (Wells & Matthews, 1996). Rumination is a self-regulatory coping process evaluating self-related information following negative events, triggered by a discrepancy between current and desired states. The supervisory executive system generates potential solutions, but using rumination as a coping method often increases emotional maladjustment and psychopathological symptoms (Matthews & Wells, 2003).

Two types of metacognitions influence rumination: positive (e.g., "Ruminating helps avoid future mistakes") and negative (e.g., rumination is uncontrollable and harmful) (Matthews & Wells, 2003; Papageorgiou & Wells, 2003). S-REF defines rumination as an active process of excessive thinking (Hallard et al., 2021). Anxiety and sadness indicate disruptions in self-regulation, threatening psychological well-being. Maladaptive coping strategies, such as worry, rumination, cognitive biases, and efforts to control internal experiences, form the Cognitive Attentional Syndrome (CAS), intensifying negative emotional experiences and contributing to psychopathological symptoms (Matthews & Wells, 2003).

CAS arises from maladaptive metacognitive beliefs, hindering thought control and contributing to negative interpretations of internal experiences (Fergus et al., 2012). CAS activation increases the likelihood of depression and anxiety, making it a central target for therapeutic interventions (Wells, 2013).

Stress-Reactive Model of Rumination

This model defines rumination as deep reflection on negative assumptions following stressful life events (Robinson & Alloy, 2003). Similar to RST, it detects ruminative processes before negative mood onset but underexplains themes like past failures or inadequacy (Smith & Alloy, 2009). The content of ruminative thoughts is directly related to stress-inducing factors. Beck's cognitive theory and the hopelessness theory suggest that maladaptive cognitive patterns elevate depression risk under adverse events (Clark & Beck, 2010; Liu et al., 2015).

Post-Event Rumination Theory

Post-event rumination, within the context of social anxiety disorder, involves repetitive thoughts about subjective experiences during recent social encounters, including evaluations by others and event details (Chen et al., 2013). It functions as a self-regulatory mechanism during social activities, evaluating mistakes and social acceptance (Kashdan & Roberts, 2007; Abbott & Rapee, 2004). For socially anxious individuals, post-event rumination leads to distress, disengagement, worthlessness, and avoidance, focusing on negative self-evaluations and fear of rejection (Penney & Abbott, 2014; Edgar et al., 2024).

Conceptual–Evaluative and Experiential Self-Focus Theory

Watkins and Teasdale (2004) define rumination as a judgmental, repetitive thinking style during self-evaluation (Watkins & Teasdale, 2004). Self-focused thoughts do not necessarily indicate psychopathology and can enable realistic self-interpretations. Self-focus divides into conceptual–evaluative–analytic (rumination-prone) and experiential–phenomenological (adaptive) subtypes. The former involves thinking about emotions and event meanings, while the latter emphasizes experiencing the present moment (Joormann et al., 2006). Overgeneral memory, generalizing negative experiences to one's entire past, is a vulnerability factor for depression (Sutherland & Bryant, 2007).

Table 1. Overview of theoretical models of rumination

Theory Name	Brief Summary
Response Styles Theory (RST)	Rumination is a habitual response to negative mood that prolongs distress and increases depression risk (Nolen-Hoeksema, 1991).
Rumination on Sadness Theory	Defines rumination as repetitive thoughts about sadness and sadness-related situations; intrusive, non-goal-directed, and not problem-solving (Conway et al., 2000).
Stress-Reactive Model of Rumination	Rumination is triggered by stressful life events and negative assumptions; precedes low mood but underexplains themes like past failures (Robinson & Alloy, 2003).
Goal Progress Theory	Rumination arises when progress toward valued goals is impeded; guides self-regulation by reassessing strategies, goals, or disengagement (Martin & Tesser, 1996).
Self-Regulatory Executive Function Theory (S-REF)	Metacognitive beliefs and executive control shape rumination; the Cognitive Attentional Syndrome maintains worry/rumination (Wells & Matthews, 1996).
2×2 Theoretical Rumination Model	Crosses positive/negative affect with positive/negative rumination, yielding four types; basis for the PANRS instrument (Yang et al., 2020).
Post-Event Rumination Theory	After social encounters, individuals (especially with social anxiety) replay and analyze events, sustaining distress and avoidance (Chen et al., 2013).
Conceptual–Evaluative Self-Focus Theory	Distinguishes conceptual–evaluative–analytic (rumination-prone) vs. experiential self-focus (adaptive); links to overgeneral memory (Watkins & Teasdale, 2004).
H-EX-A-GO-N Model	Integrates five interacting mechanisms—Habit (H), Executive control (EX), Abstract evaluation (A), Goal discrepancies (GO), Negative bias (N)—plus proximal/distal risks; informs multi-target interventions (Watkins & Roberts, 2020).

2×2 Theoretical Model of Rumination

Positive psychology, developed by Seligman and Csikszentmihalyi (2000), focuses on fostering strengths but has been criticized for neglecting negative aspects (Seligman & Csikszentmihalyi, 2000). Yang et al. (2020) proposed a 2×2 model incorporating positive and negative emotions and rumination, yielding four categories: positive rumination on positive affect (PROPA), negative rumination on positive affect (NROPA), positive rumination on negative affect (PRONA), and negative rumination on negative affect (NRONA) (Yang et al., 2020).

H-EX-A-GO-N Model

Developed by Watkins and Roberts (2020), this model identifies proximal (habit formation, executive function control, abstract evaluation, goal discrepancies, negative bias) and distal (environmental and biological) risk factors for

rumination (Watkins & Roberts, 2020). The five mechanisms contribute additively and synergistically to rumination's onset and maintenance. Pathological rumination requires multiple proximal and distal factors. Depressive rumination is a mental habit (H) formed through conditioning, with other mechanisms increasing its likelihood. Interactions between factors (e.g., goal discrepancies influencing depressed mood, abstract thinking prolonging negative affect) amplify rumination. Habits resist change, re-emerging under stress or cognitive load (Watkins & Roberts, 2020). The model predicts that interventions targeting each mechanism reduce rumination, with multi-mechanism treatments being more effective. Tailoring interventions to specific H-EX-A-GO-N factors may yield greater reductions (Watkins & Roberts, 2020).

Conclusion

Theories and models of rumination highlight its complex, multidimensional, and context-dependent nature. Each framework emphasizes different aspects—ranging from affective triggers and goal disruption to metacognitive regulation and integrated mechanistic interactions—but converges on fundamental observations. Rumination is consistently associated with amplifying negative affect, disrupting problem-solving, and perpetuating psychological distress in various clinical conditions. Some models suggest adaptive components, particularly when rumination facilitates constructive self-reflection, goal reassessment, or emotional processing. Pathological rumination is characterized by rigid, repetitive, self-reinforcing cognitive cycles resistant to disengagement, maintained by maladaptive beliefs, habitual processing, or deficits in executive control. This persistence prolongs psychiatric disorders, increases relapse vulnerability, and diminishes psychological well-being. A comprehensive understanding of rumination requires integrating these diverse theoretical approaches, acknowledging their shared mechanisms and unique contributions. This perspective can inform multifaceted prevention and intervention strategies, targeting specific cognitive, metacognitive, motivational, and neurobiological processes. By combining theoretical insights with empirical research, clinicians and researchers can develop precise, effective methods to reduce maladaptive rumination and promote adaptive cognitive and emotional functioning, ultimately improving mental health outcomes.

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