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# Thinking too much: rumination and psychopathology

Patients suffering from mental health problems often complain about thinking too much. Their mind is frequently focused on negative thoughts about their symptoms, problems, or negative experiences.

Traditionally, researchers and clinicians have either regarded this type of rumination as an epiphenomenon or consequence of suffering from mental health problems, or – as in the case of cognitive therapy – have mostly been interested in the *content* of these thoughts. However, there is increasing evidence suggesting that rumination, defined as a *process* of repetitive negative thinking, is a causal mechanism involved in the development and maintenance of psychopathology[1].

The vast majority of research on rumination has been conducted in the context of depression. In her seminal response styles theory, S. Nolen-Hoeksema introduced rumination as a way of responding to depressed mood that is characterized by repetitively and passively focusing on the symptoms of depression, and their possible causes and consequences[2]. The tendency to engage in a ruminative response style appears to be a reasonably stable trait, and can be assessed with the Response Styles Questionnaire (RSQ)[2].

There is now extensive longitudinal research showing that rumination assessed in this way: a) predicts the onset of new episodes of depression; b) predicts the maintenance of already existing depressive symptoms; c) is a mediator between other known risk factors (e.g., negative cognitive styles, childhood adversity, psychosocial stress) and depression, and d) is related to reduced response to treatment[1-4].

Converging evidence comes from experimental research showing that induced rumination leads to negative thinking, poor problem solving, inhibition of instrumental behavior, biased information processing, and impaired interpersonal functioning[1,2,4].

Importantly, however, rumination is not only related to depression, but is involved in the development and/or maintenance of a broad range of disorders, including post-traumatic stress disorder (PTSD), anxiety disorders, insomnia, eating disorders, somatic symptom disorder, and substance use disorders[2,3].

It has been argued that repetitive negative thinking (RNT) is a transdiagnostic process, and that rumination can be subsumed under this overarching concept[3,5]. For example, our group has defined RNT as a style of thinking about one's problems (current, past or future) or negative experiences (past or anticipated) that is: a) repetitive, b) intrusive, c) difficult to disengage from, d) perceived as unproductive, and e) capturing mental capacity[6].

Importantly, RNT is characterized by its process features, not its content. Specifically, the transdiagnostic perspective states that RNT shares the same process across different disorders, but is applied to disorder-specific and/or idiosyncratic topics. Thus, phenomena that have traditionally been studied from a disorder-specific perspective (e.g., depressive rumination, excessive worry in generalized anxiety disorder, trauma-related rumination in PTSD, or post-event processing in social anxiety) are now regarded as different expressions of the same underlying construct.

Supporting evidence for this conceptualization comes from research showing that the common aspects of RNT (i.e., the transdiagnostic process) are more predictive of depression and anxiety disorders than unique features of disorder-specific worry or rumination[7]. Different questionnaire measures to assess the transdiagnostic properties of RNT have been developed, including the Perseverative Thinking Questionnaire (PTQ)[6].

Thus, current evidence is in line with the idea that RNT in general (as well as rumination as a specific subfacet) can be regarded as an important process, involved in the development and maintenance of psychopathology across different diagnostic categories.

Why do some individuals then frequently engage in RNT despite the proven negative consequences? A number of different theoretical perspectives have been put forward to explain this puzzling phenomenon[1,5]. An important basic tenet of many models is the assumption that RNT is essentially a normal process that usually serves the adaptive function to alert us to a current goal discrepancy and motivate us to engage in action to reduce this discrepancy. However, excessive RNT observed in the context of psychopathology has apparently lost this function.

According to Wells[8], excessive RNT is maintained by a combination of positive metacognitive beliefs (e.g., "RNT helps me to better cope with problems"), negative metacognitive beliefs (e.g., "RNT is dangerous") as well as dysfunctional control strategies (e.g., thought suppression) triggered by negative metacognitions. In addition, there is evidence that RNT in the context of psychopathology often serves the function to avoid both unpleasant experiences (e.g., negative emotions, arousal, aversive imagery or memories) as well as action, leading to negative reinforcement. Moreover, RNT can become a mental habit that can be triggered independent of goal pursuit simply by contextual cues.

From an information processing perspective, RNT can be regarded as the consequence of cognitive biases leading to the frequent involuntary activation of representations with negative content. In addition, deficits in cognitive control then lead to a lack

of top-down control of these representations, resulting in attention remaining allocated to negative content in the form of RNT.

In his influential theoretical model, Watkins highlights that adaptive and maladaptive forms of RNT can additionally be distinguished by their processing mode[1,4]. There is now extensive evidence showing that dysfunctional RNT is characterized by an *abstract* processing mode (focus on general and decontextualized mental representations), whereas a more *concrete* processing mode (focus on the direct, specific and contextualized experience of concrete events and actions) is related to functional outcomes.

The important transdiagnostic role of RNT makes this process a promising target for prevention and treatment. Based on the theoretical models described, researchers have developed a number of interventions focused on modifying RNT, including mindfulness-based treatments, metacognitive interventions, cognitive control training, and rumination-focused cognitive-behavioral therapy[4]. In addition, there is promising evidence showing that targeting RNT in a high-risk group of adolescents has strong preventive effects by significantly reducing the incidence of depression[9].

In sum, whereas RNT had originally mainly been studied from a disorder-specific perspective, with a strong focus on the content of thinking (e.g., rumination in depression, worry in generalized anxiety disorder), there is now an emerging consensus that it is best studied from a transdiagnostic perspective focused on the characteristic process.

An important future direction for research into RNT includes clarifying links to current meta-models of transdiagnostic processes and mechanisms, such as the Research Domain Criteria framework. In addition, although there is promising evidence for the efficacy of interventions directly targeting RNT, more systematic research is needed to compare these novel interventions to traditional evidence-based treatments, and investigate the proposed mechanisms of change.

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