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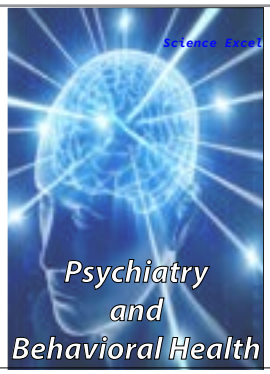

Rumination after 65: does its association with depression and gender change with age?

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Abstract

Context: It is well documented that, in adults, women are more prone to ruminate than men, and rumination and depression are robustly correlated. However, very little is known about how these links evolve as aging. The age-related cognitive and identity evolutions deeply modify the elderly's overall functioning, legitimizing this issue.

Method: Sixty-four participants were recruited by seniors' networks. The participants had to be over 65 years old, without cognitive impairment or chronic pain.

The experiment included the Geriatric Depression Scale (GDS), to assess the presence and severity of depression, and the Mini-CERTS, which evaluates the frequency of both analytic and experiential repetitive thoughts. The Mental Alternation Test (MAT) was used as a preliminary test to help ensure that participants did not have cognitive impairment.

Participants were contacted over the phone. A structured interview and a MAT test were used to assess the inclusion criteria. If the participant matched the required profile, the GDS and the mini-CERTS were administered in random order.

Results: Results show a negative correlation between frequency of constructive repetitive thoughts and depression ($r = -.49$; $p < .001$) and a positive correlation between frequency of rumination and depression ($r = .40$; $p < .001$). No significant difference was shown regarding gender and frequency of ruminations ($p > .05$).

Discussion: These results validate the maintenance of the links between repetitive thinking and depression during aging, but not the difference between men and women. These findings encourage the use of rumination-focused therapies in the treatment of depression in the elderly.

Introduction

Many studies show a robust association between depression and rumination. However, these studies have targeted adult samples, making it impossible to confirm the maintenance of these links during aging. However, cognitive functions and the endorsement of stereotypical social roles associated with femininity by women (that promote repetitive thinking) are deeply modified during aging [1,2].

These mutations question the maintenance of the link between rumination and depression, and the women tendency to ruminate more than men after 65 years.

Rumination and depression

Rumination is a generic term that refers to a maladaptive emotion regulation strategy based on repetitive negative thoughts. It covers several theorical concepts, like depressive rumination in Nolen-Hoeksema's Response Styles Theory [3], or abstract analytical repetitive thoughts in Watkins' framework [4]. Research points out that the maladaptive aspect of rumination is not directly linked to repetitive thinking itself, differentiating constructive and unconstructive repetitive thinking. Thus, Treynor and colleagues [5] distinguish reflection from brooding. The first one takes the form of an introspection questioning one's depressive state, whereas the second one focuses on the comparison between one's current situation and his unfulfilled life ideals. In the same way, Watkins [4] discriminates repetitive thoughts by the mode of information processing they rely on. On the one hand, a concrete experiential way of thinking that leads to constructive consequences by promoting emotional regulation and adaptation; and on the other hand, an abstract, analytical mode, that limits problem-solving abilities as it tends to focus on causes, meanings and consequences of events, leading to unconstructive aftermath.

As rumination was identified both as a trigger and a maintenance factor of depression [3,4], researchers started to consider ruminations

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as a transdiagnostic process [6] involved in anxiety [7,8], bipolar disorder [9], pain catastrophizing [10] and many others affective disorders [11]. A meta-analysis [12] proved the amplitude of the maladaptiveness of rumination as an emotion-regulation strategy, as it is associated with the largest effect size of all strategies (i.e. acceptance, avoidance, problem solving, reappraisal and suppression) related to psychological disorders.

Rumination has been identified as a key mechanism in the onset of depression, its severity, and its perpetuation. When subjects with depression form a ruminative response, they are more inclined to focus on their negative mood, increasing the effects of emotional congruence and defeating attempts to repair it. The depressive state would thus be stabilized by the effect of the self-centred and repetitive focus. Ruminations would therefore be a key factor in the exacerbation of depressive mood and in the perpetuation of depressive symptoms [13], by acting as a gear that would prevent the constructive resolution of the disorder [14]. As a result, ruminations are significantly associated with depression [15], and a more severe expression of its symptomatology [16].

In contrast, and to illustrate Treynor and Watkin's postulates, constructive repetitive thinking helps to restore positive mood and encourages better emotional problem solving [4, 17]. These qualities make these thoughts a promising therapeutic leverage to prevent and treat high level of rumination and depression [18].

The stakes for prevention and management of depression in old age are high: the trouble is more associated with suicide than at any other age of life [19], is correlated with a higher rate of relapse, perpetuation, and evolution into a major depressive episode [16], but also with greater mortality [20] as well as a reduced quality of life [21]. Pharmacotherapeutic options appear to be effective overall [22], but drug treatments are often not specific to this age group and are slower to act than in younger subjects [23].

Cognitive aging and ruminative pattern

The effects of normal cognitive aging are increased by depression and facilitate the development of rumination. Davis & Nolen-Hoeksema [24] hypothesize that this pattern of low cognitive flexibility, global slowdown and perseverations would ease the emergence of repetitive thinking. These rumination tendencies have a mediating role in the association between executive dysfunctions and depressive symptomatology: Philippot and Agrigoroaei [25] proved that the lack of executive resources, a phenomenon associated to aging [26], promotes repetitive thinking on an abstract mode. At the same time, these cognitive dysfunctions drastically reduce the subject's control over the ruminative mechanisms, making them quicker to adopt this response type, and therefore more vulnerable to depression [27]. This complex system of influences between depressive symptoms, diminished cognitive abilities and ruminative pattern seems to compromise adaptative emotional regulation strategies [28].

However, things are not so pessimistic for the elderly. Research by Sütterlin and colleagues [29] points out that subjects over 63 years-old reported less ruminative thinking than others age groups. These results are robust and further research centred on the Positivity Effect hypothesis [30] show that the age-related positivity is characterized by the decrease of repetitive negative thinking, with less attention paid to negative mood.

These major age-related cognitive changes associated to strong vulnerabilities facing depression and new ruminative patterns lead to questions about the maintenance of the association between depression and repetitive thinking.

Aging and mutation of stereotypical social roles associate with femininity: less rumination in elderly women?

Nolen-Hoeksema's framework points out that rumination is a response style adopted especially by women, and that this higher rate of rumination may explain their higher rates of emotional disorders [31, 32]. Furthermore, the association between repetitive negative thoughts and depression is modulated by gender. Recent study shows a bidirectional correlation between depression and rumination among adolescent girls, whereas for boys, increased ruminations emerge only because of depressive symptoms [33]. These results complete those obtained in an adult sample and pointing that women use more emotion regulation strategies [34].

From adolescence, women display more ruminations thoughts than men, especially because the stereotypical social roles associated with femininity encourage this type of thinking mode [35, 36]. Femininity refers to the integration, by an individual, of stereotypical and socially-prescribed feminine gender roles, like defined in Bem's work. Bem created the Sex Role Inventory [37], which distinguishes three categories of gender-associated personality traits: femininity (characterized by a communal and expressive personality, sensitivity to others and compassion), masculinity (an agentic personality with assertiveness, ambition and self-confidence), and finally androgyny, referring to the high integration of both feminine and masculine traits.

However, aging induces a deep mutation of gender roles, especially for women. As they age, they tend to endorse more androgenous traits (after 60 years-old and before 80) and then more masculine ones (after 80 years-old), whereas men tend to be more androgenous [38, 39]. Knowing the association between repetitive negative thinking and feminine gender-role, these mutations question a potential evolution of the difference in rumination between men and women.

Current study

The current study questioned the maintenance, after 65, of what is known about depression and rumination association and the women's higher rates of rumination in middle-age. As a matter of fact, the deep modification led by aging legitimize this issue.

Hypotheses foresee a stability of the association between depression and rumination after 65. More precisely, a positive correlation between depression and rumination (unconstructive repetitive thoughts), and a negative correlation one between depression and constructive repetitive thoughts are expected. Moreover, it is presumed that after 65, men and women present the same frequency of repetitive thinking, whether for constructive or unconstructive thoughts.

Methods

Participants

Sixty-four adults aged 65 and more (Mean age = 69,86; SD = 4,56) were recruited by senior's networks. Criteria exclude participants with cognitive impairment, chronic pain, history of stroke, dementia or alcohol dependence, recent mourning and

living in nursing homes.

The sample contains 28 women (Mean age = 69,54; SD = 4,17) and 37 men (Mean age = 70,11; SD = 4,88).

Material

The Mental Alternation Test (MAT) [40] is used to detect possible cognitive impairment in potential participants. It has a high correlation coefficient with the Mini Mental State (r = .84, p<.001) and high reliability (r = .80) [41]. It consists of asking the interviewee to recite the alphabet and count to 20, then to alternate as many letters and numbers as possible in ascending order (1-A, 2-B, 3-C, etc.). The score, of a maximum of 52 points, is calculated from the number of successful alternations in 30 seconds minus the number of errors. A score below 15 indicates the possible presence of cognitive impairment. This test was chosen because it is easy to administrate (less than a minute versus 15 minutes for the Mini Mental State), and it does not require material. These elements allow phone administration (mode which does not alter the results obtained) [42].

The Geriatric Depression Scale (GDS) of Yesavage and colleagues [43] is a 30-question questionnaire assessing the presence and degree of severity of a depressive disorder. The participant answers each question with "yes" or "no" in reference to his emotional state of the last few days. This scale was created specifically for older people, unlike other tools like the Beck Depression Inventory [44]. The items are thus adapted to depressive symptomatology in aging, with the presence of questions on possible physical complaints.

Even if abbreviated version exist, the use of the classic version makes it possible to differentiate moderate and severe impairment, with three threshold scores (absence of depression for scores below 10, moderate depression between 11 and 20, severe depression above 30).

The Mini-CERTS [45] corresponds to the short and stabilized version of the Cambridge Exeter Rumination Thinking Scale questionnaire [46]. It consists of 16 items, 7 assessing constructive thoughts and 9 the unconstructive ones (i.e. rumination). The subject is asked to evaluate, using a four-point Likert scale (from almost never to almost always, rated from 1 to 4), the frequency with which certain types of thoughts appear when he thinks about situations concerning him.

The handover provides a score of constructive thoughts (out of 28 points) and non-constructive thoughts (out of 36 points).

Procedure

The administration is done by phone. First, an interview is conducted to assess the inclusion/exclusion criteria and concluded with the passing of the MAT. If the score is greater than 15 (showing no cognitive impairment), GDS and mini-CERTS are administered in random order. Once the administrations are over, a more informal exchange allows to conclude and redirect people who may be depressed to competent authorities..

Results

We used Pearson's correlation matrix to examine the association between the frequency of the two types of repetitive thoughts and depression scores.

Because the depression variable was non normally distributed, Mann-Withney-Wilcoxon test was used (as recommended by Zimmerman & Zumbo [47]) to determine a difference between gender and repetitive thoughts frequency.

The significance level was set at $p < .05$.

Correlations between depression and repetitive thinking

A positive correlation was found between rumination scores and depression scores ($r = .40$; $p < .001$). Contrariwise, a negative correlation was uncovered between constructive repetitive thoughts scores and depression scores ($r = .40$; $p < .001$).

Repetitive thoughts frequency and gender

As foreseen, no significant difference was found in the frequency of repetitive thinking between men and women either in general, or in specific constructive or unconstructive mode ($p > .05$).

Discussion

Maintenance of the association between depression and repetitive thinking:

Our findings illustrate the maintenance of the noxious association among depression severity and rumination frequency. The more unconstructive repetitive thoughts there are, the more severe the depression is. Conversely, our results point out the adaptative role of concrete thinking as emotion-regulation strategy, just as previously found in young and middle-aged population [4].

Even though research robustly proves that older adults reported less rumination than younger ones [29, 48], and despite the deep changes of cognitive functioning [24, 26], the pattern of influences between depression and repetitive thoughts seems to remain the same. These findings confirm the relevance of rumination-focused therapies in the management of depression in the elderly. Cognitive therapies, like Watkins' rumination-focused cognitive–behavioural therapy, have repetitively proven their effectiveness in this area [49, 50], but mostly on younger samples.

The use of memories as therapeutic leverage in these cognitive treatments appears promising, creating a new field of research that leads to the validation of so-called life-review, method-of-loci, memory specificity training, reminiscence approaches, etc. [51-54]. In this perspective, therapy protocol based on self-defining memories [55, 56] seems promising for the elderly [57].

Further research needs to complete these findings, first by testing bigger cohorts and by refining our understanding of how factors can moderate or mediate the correlation between depression and rumination in the elderly. Finally, it would be interesting to test the effectiveness of cognitive therapies protocols, like Watkins', on elderly samples.

Rumination in the elderly: gender equality after all?

AAs expected, no gender difference in repetitive thinking was found, in both frequency and thinking mode. The greater propensity of women to display ruminations seems to fade with age: after 65, they report as much constructive and unconstructive repetitive thoughts as men.

However, these results are limited by two factors: first, it is impossible to know if the absence of difference is associated with the participants' age (i.e., their gender role endorsement changed as they aged) or their generation of birth (i.e., they took on different roles than younger generations but in a stable manner over their lifetime). As pointed out by Strough

and colleagues before [39], there is a need to extricate birth cohort differences and age-related changes in gender roles per se. Longitudinal studies may help to better understand the evolution of gender role endorsement over the lifespan.

At the same time, it appears necessary to complete these findings by research taking account of gender roles rather than gender. A previous study of an adolescent sample found no difference between gender on rumination, but pointed that adolescents who display more femininity-associated traits reported more rumination than masculine-associated and androgynous ones [35].

Conclusion

This study was aiming to show if the links between rumination and depression, as well as between rumination and gender, were maintained with aging.

Our results tend to demonstrate the stability of the correlation between repetitive negative thinking and depression over the lifetime. They legitimize rumination-centred cognitive therapies for the treatment of depressive disorder in people over 65. However, few of them are specifically created or even tested on senior sample.

We also find that that while women were more prone to rumination than men in adulthood, this gender difference disappeared as they aged. The mediative role of gender-associated personality traits in this evolution still needs to be better understood.

Conflict of interest

The authors declare that there is no conflict of interest.

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