THE IMPACT OF RUMINATION AND WORRY ON NIGHTLY SLEEP

A TRAIT AND STATE APPROACH

Aim

The aim of this study was to explore the relationship between rumination, worry and nightly sleep in terms of baseline and daily manifestations, in order to clarify whether rumination and worry are distinct constructs.

Introduction

Rumination is past-focussed, repetitive, recurrent, intrusive and uncontrollable thinking.
Worry is future-focussed, repetitive, recurrent, intrusive and uncontrollable thinking.
Rumination and worry are closely related [1], but it is debated whether they are actually the same psychological construct [2].

Rumination can be conceptualised as a trait (measured here by baseline questionnaires), as the tendency to ruminate is stable within an individual across time [3] and different measures [4]. It can also be conceptualised as a state (measured here by daily questionnaires), as the act of rumination itself is transitory [5]. Though trait and state measures of rumination and worry are highly correlated, they can have discrete relationships with the same physiological outcomes [6].

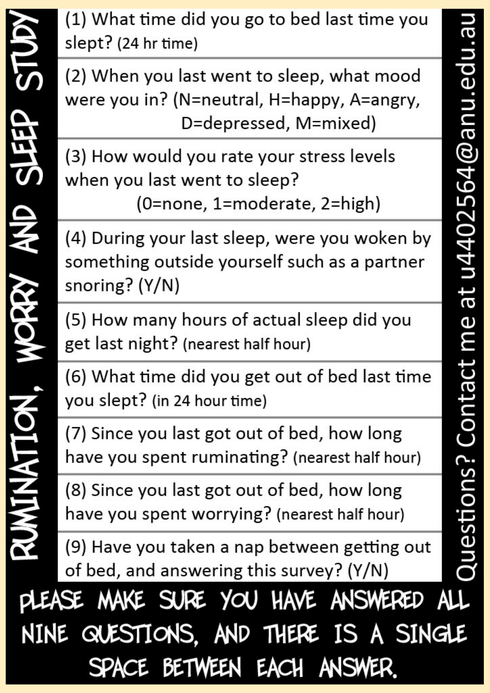
Sleep is a useful outcome measure for exploring the potential similarities and differences between the two constructs, as there is considerable evidence that both rumination and worry impact upon sleep [7][8]. Also, the distinction between rumination and worry has meaningful application in terms of the development of clinical insomnia therapies, which currently address rumination, but not worry [9]. When using only trait or state measures in isolation, rumination is associated with shorter sleep duration [7]. Worry is also associated with shorter sleep duration [8], though there is some clinical and case study evidence for an association between tendency to worry and tendency to sleep more [10].

Method

One hundred and twenty Australian National University undergraduate students (70% female) aged 17-54 (M=20) completed a battery of on-line baseline self-report measures including the Ruminative Thought Style Questionnaire [11] the Penn State Worry Questionnaire [12] and the Pittsburgh Sleep Quality Index [13].

Sixty three participants went on to complete a daily questionnaire utilizing a novel repeated measures text message daily diary framework.

The daily questionnaire was distributed on a business card (right). A prompt text message was sent out at 7:00pm nightly for a week, during university teaching period. Participants replied, also using SMS, with their responses to the questionnaire.

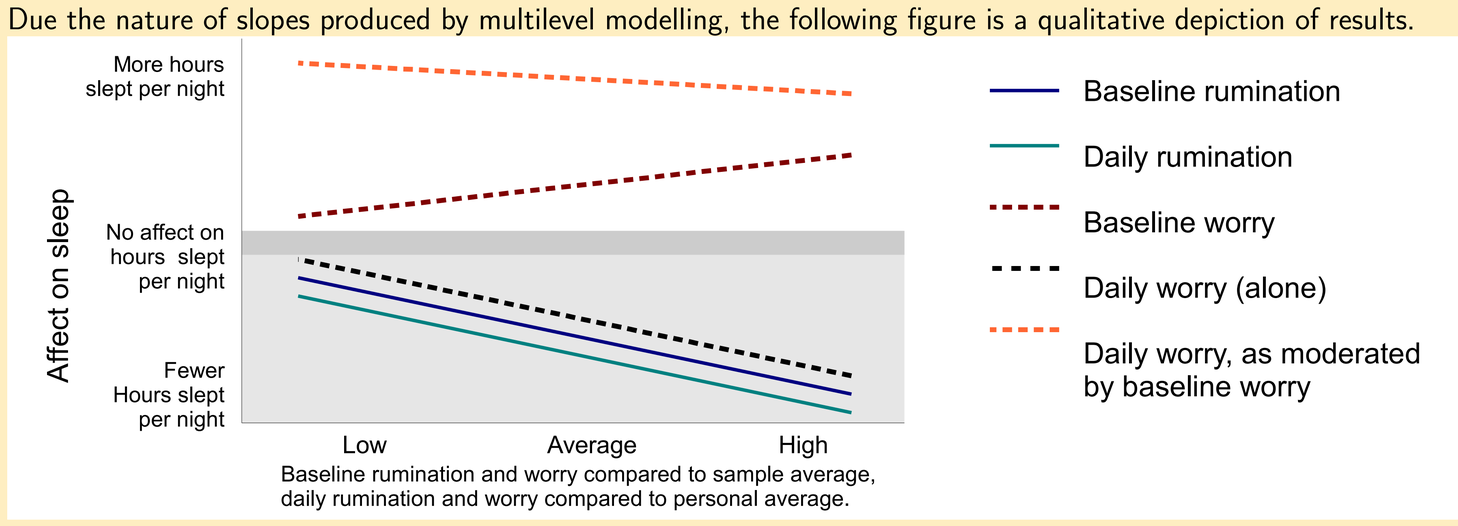


Analysis addressed the impact of daily reports of mood, stress, rumination, and worry upon reports of the following night's sleep duration.

Results

Multilevel linear models, with daily responses nested within participants, were used to explore the relationship between baseline and daily rumination and worry. All model comparisons were evaluated at α=.05, with daily stress and mood retained as covariates.

Due the nature of slopes produced by multilevel modelling, the following figure is a qualitative depiction of results.



Baseline rumination and worry compared to sample average, daily rumination and worry compared to personal average.

Baseline and daily rumination were significantly and independently associated with fewer hours slept nightly (χ^2=40, B=-5.59e-05 and χ^2=56, B=-.589 respectively).
Baseline worry was significantly associated with more hours slept nightly (χ^2=49.4, B=1.90e-04).
Baseline worry interacted significantly with daily worry (χ^2=8.4, B=-2.15) in its association with sleep.

The farther below average baseline worry, the greater its impact on the relationship between daily worry and nightly sleep (at -1 SD baseline worry, B=8.99, at mean baseline worry B=8.44, and at +1 SD baseline worry B=7.89). This means that if a low and high trait worrier experienced the same amount of state worry, a high trait worrier would subsequently experience more sleep the following night.

Discussion and Conclusions

This study investigated the relationship between baseline and daily manifestations of rumination and worry upon sleep patterns. It supported the viewpoint that, while they are closely related, rumination and worry are separate constructs.

It should be noted that rumination and worry appeared more similar than they were in actuality when baseline and daily measures were explored in isolation; it was only the simultaneous measurement and analysis of both trait and state measures that highlighted a difference between rumination and worry - differing relationships between trait and state manifestations.

As the distinction between rumination and worry has meaningful application in terms of the development of clinical insomnia therapies, the current study highlights a need to re-evaluate and broaden the current clinical focus on worry and sleep pathology to include the association between rumination and sleep.

The surprising finding that higher worry is associated with more sleep may be explained by the current study's methodology. Sleep was measured in terms of hours slept, without taking into account the amount of time individuals took to go to sleep. Worry, particularly worry about the consequences of failing to sleep, can substantially delay sleep onset [14]. Extended periods of time spent attempting to get to sleep may have established a cycle of exhaustion, subsequently compensated for by a lengthened period of sleep.

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