

Bedtime thoughts: Worry and rumination mediate the association between stress and sleep



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Problem

The negative impact of psychological stress on sleep is well established in the literature, but less is known about the mechanisms mediating this effect. Cognitive models of insomnia suggest that repetitive thoughts play a central role in the onset and maintenance of insomnia and that these “perseverative cognitions” about stress-related cognitions may serve as the bridge between stress and sleep problems.

The aim of our study was to examine whether future-oriented negative thoughts (worry) and past-oriented negative thoughts (rumination) partially mediate the relationship between stress and insomnia.

Method

Five-hundred individuals completed an online survey that included demographic questions and self-report measures of stress, pre-sleep worry, pre-sleep rumination, and insomnia.

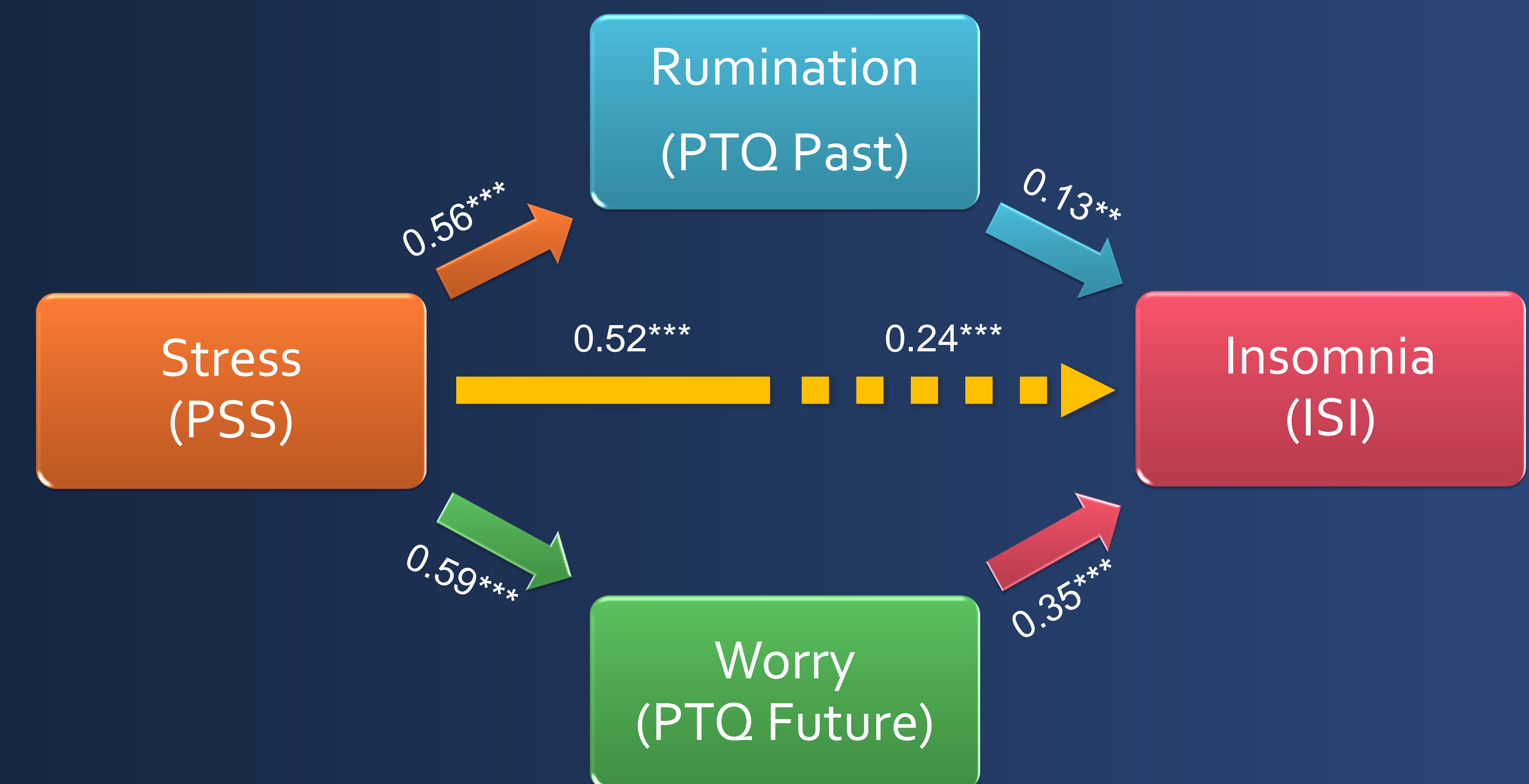
Stress was assessed using the Perceived Stress Scale (PSS) and insomnia was assessed using the Insomnia Severity Index (ISI). To assess worry and rumination we presented the same measure of perseverative cognitions (Perseverative Thinking Questionnaire [PTQ]) twice, but with different instructions. For rumination, we asked participants to respond to the PTQ questions “...in relation to negative thoughts about PAST events or experiences.” For worry, we asked participants to respond to the PTQ questions “...in relation to worries about FUTURE events.” Participants ranged in age from 18 to 73 ($M = 24.5$, $SD = 7.3$). Eighty-one percent of the sample was female and the large majority (91%) of participants classified themselves as Hispanic. Participants were recruited on a voluntary basis through class announcements, Facebook posts, and social networking.



Results

Stress and insomnia were positively correlated ($\beta = 0.52$, $p < .001$). Stress was also positively correlated with worry ($\beta = 0.59$, $p < .001$) and rumination ($\beta = 0.56$, $p < .001$). After controlling for stress scores, worry ($\beta = 0.35$, $p < .001$) and rumination ($\beta = 0.13$, $p = .009$) were each positively associated with insomnia scores. To test whether an indirect effect through worry and rumination exists, a multiple mediation analysis (Preacher & Hayes, 2008) was conducted. Bootstrapping estimates of the 95% confidence interval for the total indirect effect [0.21, 0.33] indicated significant mediation of the relationship between stress and insomnia through worry and rumination.

Moreover, bootstrapping estimates of the 95% confidence intervals of the specific indirect effects indicated that worry [0.13, 0.27] and rumination [0.01, 0.13] independently mediated the stress–insomnia relationship. A contrast of the indirect effects indicated that the indirect effect through worry was significantly larger than the indirect effect through rumination, 95% confidence interval of the contrast = [-0.24, -0.02].



Conclusion

Our data suggest that the effect of stressors on sleep is partially mediated by rumination and partially mediated by worry. Though worry and rumination share common cognitive processes and are strongly correlated, the mediation effects were independent of each other; both showed statistically significant mediation when controlling for the other. Such results suggest that cognitive-behavioral therapies should not focus exclusively on worry or rumination, but may benefit from minimizing both forms of perseverative cognitions.

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