

INTRODUCTION

Mindfulness has been described as the capacity to attend to the present experience in a non-reactive and non-judgmental manner ¹. Both mindfulness training and trait mindfulness have been related to better sleep quality ^{2,3}. Recent studies have shown that the relationship between mindfulness and sleep quality may be mediated by a reduction in psychological stress ⁴. However, the possible role of sleep reactivity, defined as the susceptibility to experiencing disturbed sleep following exposure to a stressor and a significant risk factor for chronic insomnia ⁵, has not yet been investigated. The present correlational study aimed to evaluate the mediating role of sleep reactivity on the relationship between trait mindfulness and insomnia.

METHODS & RESULTS

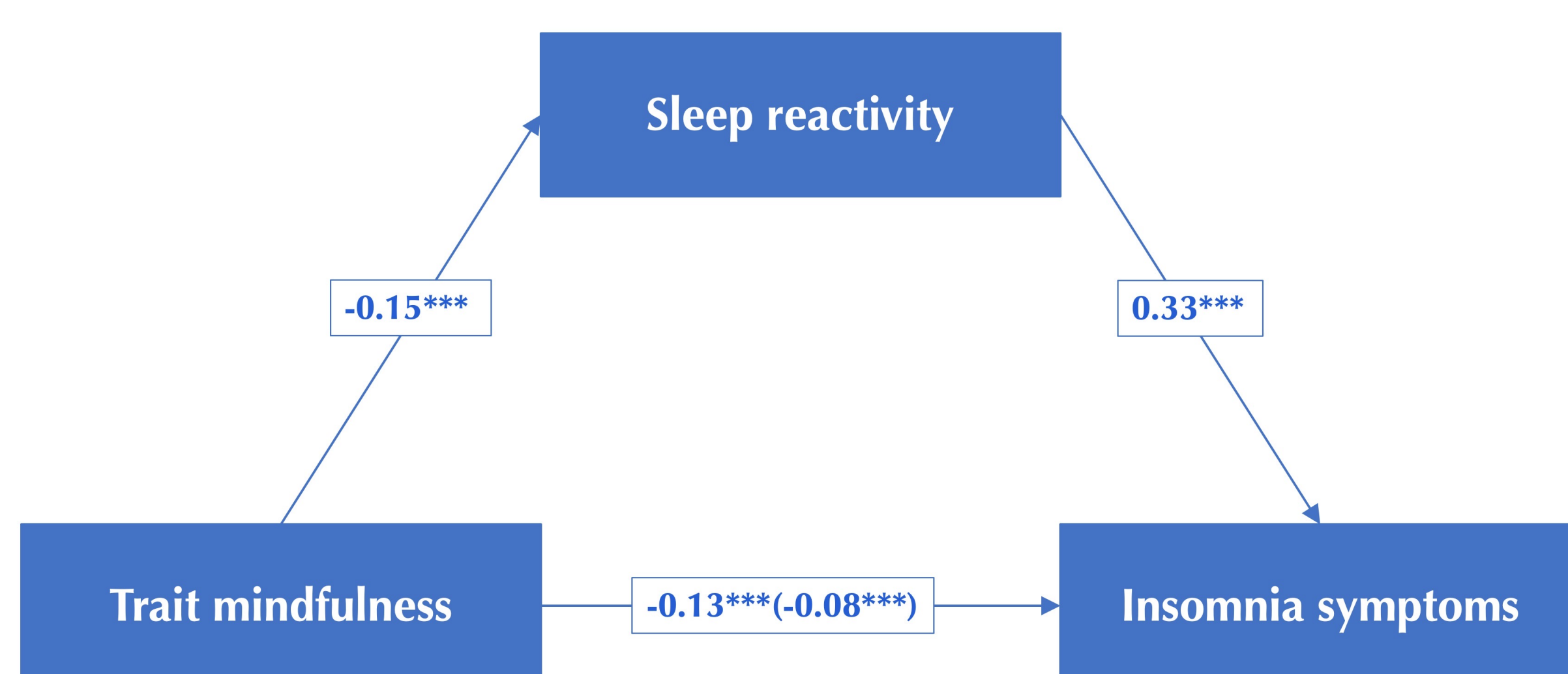
359 volunteers were recruited for an online survey. The age of the participants ranged from 18 to 73 years (mean age: 34.82 ± 11.62). The sample consisted of 278 (77%) females and 81 (23%) males. Participants completed the following self-report questionnaires: the *Five Facet Mindfulness Questionnaire-24* (FFMQ-24; Bohlmeijer et al., 2011), the *Ford Insomnia Response to Stress Test* (FIRST; Drake et al., 2004), and the *Insomnia Severity Index* (ISI; Morin, C. M., 1993). The relationships between the main variables of the study were first analysed using Pearson correlations. Next, two mediation analyses were conducted. In the first analysis, the overall FFMQ score was entered as predictor, the FIRST as mediator, and the ISI as dependent variable. In the second analysis, instead, the five subscales of the FFMQ (Observing, Describing, Acting with Awareness, Non-judging and Non-reacting) were entered as individual predictors.

Table 1. Descriptive statistics and correlation coefficients for study variables

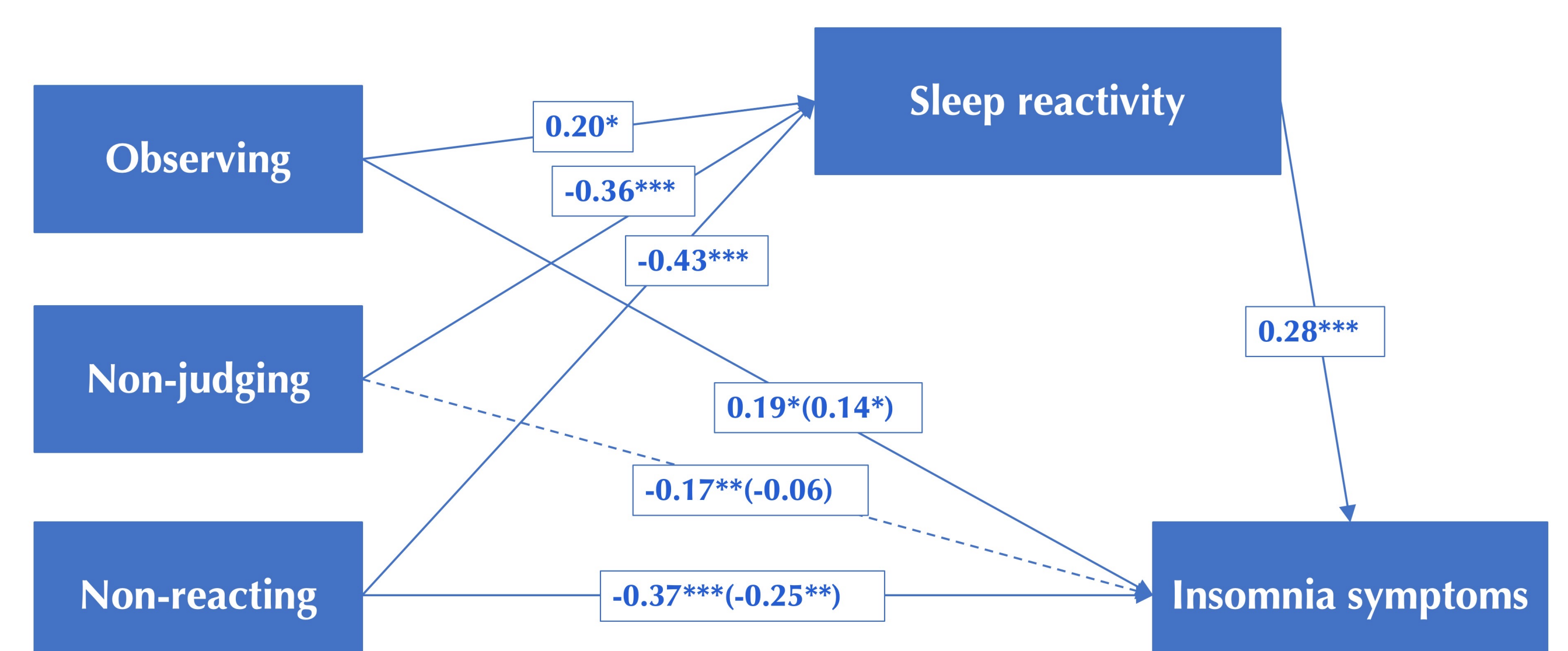
	M	DV	FFMQ tot	FFMQ1	FFMQ2	FFMQ3	FFMQ4	FFMQ N5	FIRST
FFMQ tot	79.56	12.92	\						
FFMQ1 Observing	14.8	3.81	0.46***	\					
FFMQ2 Describing	17.62	4.10	0.73***	0.32***	\				
FFMQ3 Acting with awareness	18.11	4.35	0.63***	0.05	0.34***	\			
FFMQ4 Non-judging	15.03	4.84	0.65***	-0.07	0.27***	0.40***	\		
FFMQ5 Non-reacting	14.01	3.77	0.61***	0.27***	0.36***	0.08	0.25***	\	
FIRST	21.01	6.45	-0.31***	0.09	-0.14**	-0.17**	-0.38***	-0.31***	\
ISI	7.11	5.29	-0.33***	0.05	-0.22***	-0.20***	-0.31***	-0.32***	0.48***

Note. FFMQ = Five Facet Mindfulness Questionnaire; FIRST = Ford Insomnia Response to Stress Test; ISI = Insomnia Severity Index. Significance level is reported as * p < .05, ** p < .01, *** p < .001

- Trait mindfulness is negatively correlated with sleep reactivity and insomnia symptoms.
- The subscales of the FFMQ (Describing, Acting with awareness, Non-judging and Non-reacting) correlate negatively with sleep reactivity and insomnia symptoms.
- Sleep reactivity correlates positively with insomnia symptoms.



- **The relationship between trait mindfulness and insomnia was partially mediated by sleep reactivity** (indirect effect: $\beta = -0.05$, SE = 0.01, 95% CI [-0.07, -0.03]).



- **Sleep reactivity partially mediates the effect of Observing** (indirect effect: $\beta = 0.06$, SE = 0.03, 95% CI [0.005, 0.12]) and **Non-reacting** (indirect effect: $\beta = -0.12$, SE = 0.03, 95% CI [-0.18 -0.06]) **on insomnia symptoms**.
- **Sleep reactivity fully mediates the effect of Non-judging on insomnia symptoms** (indirect effect: $\beta = -0.1$, SE = 0.03, 95% CI [-0.16, -0.05])

CONCLUSION

This is the first report to examine the relationship between trait mindfulness, sleep reactivity and insomnia. The results showed that trait mindfulness reduces insomnia symptoms through a reduction in sleep reactivity. Specifically, Non-judging and Non-reacting to one's inner experience reduce individuals' tendency to experience sleep disturbance following a stressful life event, leading to a reduction in insomnia symptoms. In contrast, the Observing facet of the FFMQ was associated with an increase in insomnia symptoms through an increase in sleep reactivity. This finding may be related to the different behavior of this subscale in samples of meditators and non-meditators. Further analysis is needed to understand this pattern of results. In conclusion, the results confirm the protective role of trait mindfulness on sleep by reducing sleep reactivity to stress and suggest a potential preventive role of mindfulness-based interventions for those most at risk of suffering from situational insomnia.

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