



## Tired minds, tired ideas? Exploring insomnia and creativity



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### ABSTRACT

Do tired minds have tired ideas? In two studies, we explored the role of insomnia and personality in divergent thinking, everyday creative behavior, and creative achievement. Using a well-validated measure of insomnia—the Bergen Insomnia Scale—the present work explored the differential effects of nighttime and daytime insomnia symptoms. Structural equation models found a moderate effect of a global insomnia factor on divergent thinking ( $\beta = .19$ ). Further analysis showed time-of-day effects: nighttime sleep disturbances positively predicted divergent thinking more strongly ( $\beta = .15$ ) than daytime disturbances ( $\beta = .03$ ). A similar pattern emerged regarding everyday creative behavior: nighttime impairments showed a positive effect ( $\beta = .15$ ) and daytime impairments showed a negative effect ( $\beta = -.15$ ). Global insomnia and the time-of-day variables had small and negative effects on creative achievement. The present research highlights the importance of taking a nuanced approach to the study of insomnia and creativity.

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### 1. Tired minds, tired ideas? Exploring insomnia and creativity

Folk theories of creativity often characterize the creative person as someone who struggles with an uncontrolled mind: the manic artist frantically working through the night is a common image (Weisberg, 2006). Yet empirical research on the association between sleep disturbances and creativity is limited and conflicting. The small literature focuses on divergent thinking—a measure of general creative ability—so it remains unclear how insomnia predicts real-world creative behaviors and achievements. In the present research, we sought to reconcile and extend the literature on insomnia and creativity using a well-validated measure of insomnia symptoms (Pallesen, Bjorvatn, Nordhus, Sivertsen, & Hjørnevik, 2008) and a well-rounded approach to the assessment of creativity.

### 2. Insomnia and divergent thinking

Despite mounting evidence of the harmful effects of insomnia in many domains of human performance, only a few studies have considered the role of insomnia in creativity. Chronic sleep disturbance impairs people's ability to control attention (Van Dongen, Maislin, Mullington, & Dinges, 2003), form new memories (Yoo, Hu, Gujar, Jolesz, & Walker, 2007), and make decisions (see Harrison & Horne, 2000, for a review). The handful of studies that have explored insomnia and divergent thinking provide different accounts (Horne, 1988; Healey & Runco, 2006).

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Much research suggests that sleep disturbance is harmful to creativity. Horne (1988) conducted a sleep-deprivation study with a sample of college students. Half of the sample remained awake for 32 h in a research lab; half was instructed to sleep at home. Participants completed several intelligence tests and the figural and verbal forms of the Torrance Test of Creative Thinking (TTCT; Torrance, 1962). The sleep-deprived sample performed substantially worse on the TTCT but not on the intelligence tasks. Follow-up studies have replicated these findings in similar sleep deprivation paradigms (Harrison & Horne, 1999). Research in problem solving corroborates the divergent thinking work by showing harmful effects of sleep loss and beneficial effects of sustained sleep (e.g., Cai, Mednick, Harrison, Kanady, & Mednick, 2009).

Only one study has proposed that creative thinking brings about insomnia (Healey & Runco, 2006). To assess creativity, the authors administered the figural TTCT and split the sample of school-aged children at the 90th percentile to form high and low-creative groups. To assess insomnia, they selected items related to sleep disturbance from child depression and anxiety scales. The more creative group of children had more incidences of sleep disturbances than the control group. The findings were interpreted as support for the contention that higher levels of divergent thinking cause higher levels of insomnia, although the design was cross-sectional and correlational.

### 3. The present research

In the present research, we conducted two studies to examine the role of insomnia in creativity. The small body of research on insomnia and creativity has produced two opposing perspectives: on the one hand, Healey and Runco (2006) reported a positive relationship between sleep disturbances and divergent thinking; on the other hand, Horne (1988) showed harmful effects of sleep deprivation on divergent thinking. One notable limitation of Healey and Runco (2006) was their use of an ad-hoc insomnia scale with unknown validity. Although the items of this scale were related to sleep disturbances, the original scales were designed to measure anxiety and depression. The present research thus sought to clarify and extend past work. In two studies, we assessed insomnia symptoms using an effective measure of insomnia with extensive validity evidence (Pallesen et al., 2008). Furthermore, the two studies captured several facets of creativity. Study 1 measured creative cognition using divergent thinking tasks; Study 2 measured people's creative behaviors, ranging from common "little c" creativity to significant "Big C" creative accomplishments (Kaufman, Plucker, & Baer, 2008). As a pair, the studies thus provide a well-rounded look at insomnia and creativity.

### 4. Study 1

Study 1 examined whether insomnia predicts creative cognition, assessed as divergent thinking. To assess insomnia, we used the Bergen Insomnia Scale (BIS), a scale that evaluates chronic sleep disturbances (Pallesen et al., 2008). To assess divergent thinking, we used the unusual uses task, a classic measure of domain-general creative cognition (Kaufman et al., 2008). Finally, we assessed personality using a brief Big Five scale (Gosling, Rentfrow, & Swann, 2003) to determine if insomnia predicts divergent thinking over and above normal personality.

## 5. Method

### 5.1. Participants

The data were collected as part of a larger project of individual differences in cognitive abilities (Silvia et al., under review). The sample comprised 131 people—110 women and 21 men—who were undergraduates enrolled in psychology courses at UNCG (mean age = 19.71, SD = 4.92). Students volunteered to participate and received credit toward a research option. Based on self-reported race and ethnicity, the sample was 70% European American, 23% African American, 6% Asian, and 5% Hispanic or Latino (people could indicate several options).

### 5.2. Procedure

Students participated in groups ranging from 1 to 8. Upon entering the lab, they completed consent forms, were briefed by an experimenter on the purpose of the study, and completed questionnaires and cognitive tasks.

#### 5.2.1. Insomnia

We used the BIS to measure insomnia (Pallesen et al., 2008). This six-item scale was modeled on DSM-IV-TR criteria for clinical insomnia and has been validated against subjective reports and polysomnographic data (i.e., physiological measurements of respiration, limb movement, and sleep-stage progression during controlled laboratory sleep). Half of the items relate to nighttime disturbances (e.g., "During the past month, how many days a week have you been awake for more than 30 min between periods of sleep?") and half relate to daytime disturbances (e.g., "During the past month, how many days a week have you felt that you have not had enough rest after waking up?"). For each item, participants responded using an eight-point scale from 0 to 7, with each number representing the days per week that a specific symptom was experienced.

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