Obsessive-compulsive symptom dimensions and insomnia: The mediating role of anxiety sensitivity cognitive concerns

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ABSTRACT

Existing research on the relationship between obsessive-compulsive disorder (OCD) and insomnia is scarce. Moreover, no research has examined potential mechanisms that may account for the observed relations among OCD and sleep difficulties. The cognitive concerns subscale of anxiety sensitivity (AS), which reflects fears of mental incapacitation, has been linked to both symptoms of OCD and insomnia and may serve as a mechanism for increasing sleep disturbance among patients with OCD. The current study examined the relationship between OCD symptoms and insomnia and the potential mediating role of AS cognitive concerns. The sample consisted of 526 individuals recruited through Amazon's Mechanical Turk (Mturk), an online crowdsourcing marketplace. Results revealed distinct associations between the unacceptable thoughts domain of OCD and symptoms of insomnia. Additionally, AS cognitive concerns mediated the relationship between these constructs. Future research should seek to replicate these findings using clinical samples and prospective designs.

1. Introduction

Sleep disturbances are common among the general population, with up to one third of individuals reporting at least occasional difficulties falling or staying asleep (Breslau et al., 1996). These sleep difficulties may become chronic, and develop associated daytime consequences, including fatigue, irritability, and dysphoric mood. About 6% of the population may have such chronic sleep difficulties along with clinically significant distress and impairment, consistent with a diagnosis of insomnia disorder (Ohayon, 2002). Individuals with this disorder often complain of various disruptions to their daytime functioning, including sleepiness interfering with their daily activities, problems focusing, and decreased productivity in personal and occupational roles. In addition to these personal consequences, when direct (e.g., healthcare costs), and indirect (e.g., medical comorbidities, insomnia related alcohol abuse, reduced workplace productivity, motor vehicle and other accidents) insomnia-related costs are combined, they are estimated to range from $92 to $107 billion annually across the United States (Rosekind and Gregory, 2010). These data suggest that insomnia disorder, and symptoms thereof, are prevalent and costly, meriting further research.

In addition to the prevalence and consequences associated with sleep disturbances and insomnia disorder in the general population, individuals with mental illness are much more likely to suffer from sleep difficulties and associated problems. Specifically, some degree of sleep disturbance is highly comorbid with nearly all psychiatric disorders (Benca et al., 1992). In fact, a meta-analysis has indicated that objective sleep disturbance (e.g., reduced total sleep time and sleep efficiency, and increased sleep onset latency) as measured by polysomnography is linked with the presence of a psychiatric disorder (Benca et al., 1992). In particular, sleep disturbances are present in large proportions of individuals with mood and anxiety disorders. For example, the majority (60–84%) of individuals with major depressive disorder (MDD) report some symptoms of insomnia including difficulty falling asleep (Ford and Kamerow, 1989; Hamilton, 1989). In terms of anxiety disorders, generalized anxiety disorder (GAD) has the greatest comorbidity rate with insomnia, with approximately 60% of those with GAD reporting at least occasional symptoms of insomnia (Monti and Monti, 2000; Bélanger et al., 2004). However, sleep disturbances have been found to be present in most, if not all, anxiety-related conditions, including specific phobia, panic disorder, and post-traumatic stress disorder (Ohayon, 1997; Lamarche and De Koninck, 2007).

An additional anxiety-related disorder that has received less attention with regard to sleep disturbances, including symptoms

of insomnia, is obsessive-compulsive disorder (OCD). OCD is a heterogeneous psychiatric disorder characterized by recurrent and intrusive thoughts, images, or urges (i.e., obsessions) and/or excessive avoidance and repetitive behaviors (i.e., compulsions) aimed at reducing or neutralizing the associated distress and anxiety (American Psychiatric Association, 2013). Approximately 2–3% of the population suffers from this complex and debilitating disorder (Kessler et al., 2005). OCD can lead to substantial impairment in social, occupational, and family domains and is associated with a considerable economic burden to both the individual and society (Markarian et al., 2010).

Recent research has begun to closely examine the relationship between obsessive-compulsive (OC) symptoms and sleep disturbances. In a systematic literature review on sleep and OCD, Paterson et al. (2013) found that sleep disturbances were common among individuals with OCD (e.g., up to 48% in some samples). Specifically, individuals with OCD had reduced sleep duration and sleep efficiency compared to healthy controls with increased periods of waking after sleep onset, particularly early morning awakenings (Insel et al., 1982; Hohagen et al., 1994; Voderholzer et al., 2007). In addition, elevated levels of sleep disturbances among those with OCD were associated with increased severity of OC symptoms. More recently, Timpano et al. (2014) extended this research by investigating which aspects of OC symptoms may be related to specific components of sleep disturbances. Here, the authors found that insomnia symptoms (i.e., difficulties initiating and maintaining sleep and associated distress/impairment) were most related to OC symptoms (compared to other sleep disturbances such as delayed bedtime and nightmares). This relationship was particularly strong between insomnia and the obsessions (e.g., sexual, religious or aggressive in nature) dimension of the obsessive-compulsive inventory revised, consistent with the notion that distressing obsessions may interfere with sleep onset (Timpano et al., 2014).

There are a number of possible explanations for the relationship between OCD and insomnia. First, direct effects may be present such that individuals suffering from persistent obsessions have more difficulty falling or staying asleep. Other possible explanations include indirect mechanisms such as shared comorbidity or risk factors. One shared risk factor that could help to explain the association between OC symptoms and sleep disturbances is anxiety sensitivity (AS). AS is a well-researched individual difference variable reflecting the tendency to fear bodily sensations associated with anxious arousal (Reiss and McNally, 1985). Research on the dimensional structure of AS has indicated that AS comprises one higher order factor (AS), as well as three lower order factors reflecting fears of the physical, social, and cognitive consequences of anxiety (Taylor et al., 2007). Whereas relations between the various AS subscales and several of the OC symptom domains have been found, the cognitive concerns subscale of AS, which represents fears of mental incapacitation (e.g., "When I cannot keep my mind on a task, I worry that I might be going crazy") appears to have the strongest associations with OC domains (see Robinson and Freeston, 2014 for a review). In particular, research from both clinical and non-clinical samples has demonstrated unique associations between the cognitive concerns subscale of AS and the unacceptable thoughts (e.g., sexual, religious, or aggressive in nature) domain of OCD (Wheaton et al., 2012; Raines et al., 2014b).

In addition to the relations between AS cognitive concerns and OC symptoms, research has also found distinct associations between AS cognitive concerns and symptoms of insomnia. For example, Vincent and Walker (2001) examined the relationship between AS and sleep-related impairment in a sample of individuals with chronic insomnia and found that the cognitive concerns dimension of AS was associated with sleep-related impairment.

Calkins et al. (2013) extended this research by examining the associations between AS and sleep dysfunction after accounting for two highly relevant sleep related constructs, dysfunctional beliefs about sleep and neuroticism. The authors found that whereas AS total scores did not significantly predict sleep dysfunction, the cognitive concerns subscale did. Given the associations between OC symptoms and AS cognitive concerns, as well as the associations between AS cognitive concerns and insomnia, it is reasonable to assume that AS cognitive concerns could be one factor accounting for the relations between OC symptoms and insomnia.

The current study sought to replicate and extend previous research by examining the relationship between OC symptoms and insomnia and the potential mediating role of AS cognitive concerns. Consistent with previous research (Timpano et al., 2014), it was hypothesized that the unacceptable thoughts domain of OCD would be most associated with symptoms of insomnia. Second, mediation procedures were used to test the hypothesis that AS cognitive concerns would mediate the relationship between the unacceptable thoughts domain of OCD and symptoms of insomnia. Finally, in an effort to demonstrate specificity, a multiple mediator models approach was used to test the hypothesis that AS cognitive concerns rather than AS physical or AS social concerns would mediate the relationship between unacceptable thoughts and symptoms of insomnia. Because recent reviews have called for the inclusion of relevant covariates (i.e., those associated with both OCD and insomnia) when examining the associations between OCD and sleep disturbances (Paterson et al., 2013), overall levels of worry and number of traumatic life events (TLEs) were controlled for in the current analyses.

2. Methods

2.1. Participants and procedure

Individuals were recruited through Amazon's Mechanical Turk (Mturk). Mturk is an online labor marketplace that allows one to recruit a large number of "workers" to complete various tasks. Workers can browse tasks by title, availability, and reward and are paid upon completion (Shapiro et al., 2013). Mturk is becoming an increasing popular way to collect clinically relevant data as this method lends itself well to the collection of self-report data. Data obtained from Mturk is high in quality (Buhrmester et al., 2011; Paolacci and Chandler, 2014). In addition, individuals are typically white, middle class, educated, underemployed, and approximately 30 years of age (Berinsky et al., 2012; Shapiro et al., 2013). The survey for the current study was made available to individuals living in the United States who were over the age of 18 and demonstrated high quality work on previous tasks as indicated by a Human Intelligence Task rating greater than 90%. After giving informed consent, participants completed a battery of self-report questionnaires that took approximately 1 hour, for which they were compensated $1.00. This payment is consent with the median hourly wage for tasks performed on Mturk (Horton and Chilton, 2010).

Overall, 526 individuals completed the online survey. Two validity check items (e.g., "Are you reading this questionnaire?") were included as a safety test against random responses. No individuals missed both of these questions, thus no participants were excluded in the current investigation. The sample was predominantly female (69.2% female, 30.8% male) with ages ranging from 18 to 72 ($M = 34.87$, $SD = 12.41$). The majority of participants were Caucasian, identifying as 84.2% Caucasian, 8% African American, 4.2% Asian, 1.1% American Indian, and 2.5% other (e.g., biracial). A majority of the sample (36.3%) identified their relationship status as married, with 35.9% identifying as single or never married, 15.2% cohabitating, 10.1% divorced, 1.1% widowed, 0.8% separated and 0.6% responded "other". Regarding highest level of education, 1.1% had completed some high school, 12.9% had a high school diploma or the equivalent to a GED, 3.6% attended a business, trade, or technical school, 35.7% had some college, a 2 year degree, or an AA, 35.2% had a college degree (i.e., BA or BS), and 11.4% had a graduate degree (i.e., MA, MS, JD, MBA, or PhD).

2.2. Measures

2.2.1. Anxiety sensitivity.

AS was assessed using the Anxiety Sensitivity Index-3 (ASI-3; Taylor et al., 2007). The ASI-3 is an 18-item self-report measure of AS. This scale provides a more