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Transdiagnostic processes in emotional disorders and insomnia: Results from a sample of adult outpatients with anxiety and mood disorders

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ABSTRACT

Conceptual similarities between recent models of insomnia and emotional disorders suggest there may be common factors that underlie or maintain these difficulties. Maladaptive cognitive and behavioral processes similar to those described in connection with emotional disorders have been cited as key mechanisms in the maintenance of primary insomnia. Unfortunately, research on this potential overlap is lacking. The present study examined the relationship among anxiety sensitivity (AS), dysfunctional beliefs, fatigue, safety behaviors, and insomnia severity in 59 outpatients with anxiety and mood disorders. Key insomnia processes (dysfunctional beliefs, fatigue, safety behaviors) were all related to insomnia severity in the comorbid sample, although AS was not. However, as hypothesized, AS did moderate the relationship of both dysfunctional beliefs and fatigue with insomnia severity. The relationships between key insomnia processes and insomnia severity was strongest among individuals high in AS. Results support the hypothesis that common mechanisms are involved for insomnia and emotional disorders. AS might function as a mechanism for the maintenance of sleep disturbance in the context of anxiety and mood disorders, suggesting a promising avenue for future research.

Faulty or dysfunctional beliefs, attentional and interpretive biases, and conditioned safety behaviors similar to those in emotional disorders have also been cited as key mechanisms in the maintenance of primary insomnia (Harvey, 2002a; Harvey, Tang, & Browning, 2005; Morin, 1993). Dysfunctional beliefs in insomnia include unrealistic expectations regarding how much sleep one needs, beliefs that there are severe consequences of inadequate sleep, and external attributions for one's insomnia difficulties (Morin, Stone, Trinkle, Mercer, & Remsberg, 1993). Attentional and interpretive biases identified in insomnia occur both at night and during the day. At night, individuals with insomnia exhibit selective attention to possible signs of wakefulness or inadequate sleep. They also exhibit negative interpretive biases toward neutral cues (Harvey, 2002a). For instance, if an individual returns home from work and finds s/he is still thinking about work, s/he might interpret that as sign that s/he will not be able to fall asleep that night. During the day, selective attention is focused on detecting signs of fatigue and interpreting these signs as indicative of impairment in functioning (Harvey, 2002a). Safety behaviors in insomnia generally stem from the individual's flawed beliefs and are intended to compensate for his/her concerns (Harvey, 2002b; Woodley & Smith, 2006). For example, a person who believes that s/he cannot function adequately on fewer than 7 h of sleep may employ the safety behavior of calling in sick to work or taking a nap on days when s/he estimates having slept fewer than 7 h. For individuals with insomnia, these three processes – faulty beliefs, cognitive biases, and safety behaviors – are hypothesized to mutually reinforce each other in a maladaptive cycle (see Harvey, 2002a).

Apart from the focus on insomnia, the cognitive and behavioral processes outlined above appear identical to processes implicated in the maintenance of emotional disorders (see Harvey, Hairston, Gruber, & Gershon, 2009 for a similar argument). Barlow's (2002) model of anxious apprehension, for example, describes a similar set of processes intertwined in a maladaptive feedback loop that serves to maintain anxiety. Once cues in the environment have been appraised as indicating presence of threat(s): attention shifts to monitor for signs of threat; arousal level increases; attentional, interpretive and memory biases toward threat emerge; performance dysfunctions result from interference in concentration; and coping attempts characterized by worry and avoidance behaviors develop (Barlow, 2002). These same processes are implicated and function similarly regardless of the specific threat(s) an individual is focused on. This is consistent with recent dimensional approaches to the classification of emotional disorders that have conceptualized anxiety and mood disorders as sharing a common set of features

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and have accounted for the myriad of phenotypic variations in presentation depending upon the focus of anxious apprehension (cf. Brown & Barlow, 2009).

Despite the overlap of these maladaptive cognitive and behavioral processes in insomnia and emotional disorders, the synergy of these processes in populations with comorbid sleep disturbance and emotional disorders has not been examined closely. Preliminary evidence suggests that faulty beliefs related to insomnia increase with endorsement of anxious and depressive symptomatology (Carney, Edinger, Manber, Garson, & Segal, 2007; Sánchez-Ortuño & Edinger, 2010). It has been speculated that the presence of comorbid anxiety or depression may simply increase the magnitude of these cognitive and behavioral processes, and thereby increase the overall severity of insomnia. But these overlapping processes require further exploration in comorbid samples.

One factor that may help explain the link between processes associated with insomnia and emotional disorders is anxiety sensitivity (AS). AS, or fear of anxiety-related sensations, has been conceptualized as a heritable risk factor implicated in the development and maintenance of emotional disorders (McNally, 1999, 2002; Stein, Lang, & Livesley, 1999; Taylor, 1999). AS is believed to stem from flawed beliefs of the danger posed by anxiety sensations (McNally, 1999). For example, an individual high in AS might worry that a racing heart will lead to a heart attack or that a feeling of derealization is a precursor to going insane. AS has been found to be associated with the range of anxiety disorders, somatoform disorders, and depression (Cox, Borger, & Enns, 1999; Naragon-Gainey, 2010). It is hypothesized that the fearful beliefs associated with AS result in a cascade of maladaptive cognitive and behavioral processes that serve to reinforce and perpetuate emotional disorder symptomatology. Faulty beliefs of the danger of anxiety symptoms lead to increased attention toward cues of possible physical symptoms of anxiety and arousal, an interpretive bias toward detecting such symptoms, and finally, conditioned behaviors to avoid feared sensations (Barlow, 2002; Taylor, 1999). Avoidance then strengthens the original fearful beliefs by preventing their disconfirmation.

Only a small number of studies have examined the relationship between AS and insomnia (Babson, Trainor, Bunaciu, & Feldner, 2008; Vincent & Walker, 2001). One study found that AS predicted sleep-related impairment, but not sleep efficiency (Vincent & Walker, 2001). To explain this finding, the authors suggest that fear of the consequences of sleep loss might have an impact on daytime impairment even when sleep is relatively normal. A separate study found that AS moderated the relationship between sleep anticipatory anxiety (anxiety about falling asleep or getting quality sleep) and sleep onset latency, such that the relation between the two sleep variables was strongest among individuals high in AS (Babson et al., 2008). In other words, AS was a risk factor for participants with sleep anticipatory anxiety. AS has not yet been examined in relation to faulty beliefs, cognitive biases, and safety behaviors associated with insomnia. But, given evidence of the relationship between AS and dysfunctional beliefs, cognitive biases, and safety behaviors in emotional disorders and the similarity of these processes with those identified in primary insomnia, AS may be a risk factor which helps explain the overlapping processes and co-occurrence of insomnia and emotional disorders. The present study addresses this gap in the literature by examining these overlapping processes identified in primary insomnia, and exploring the role of AS, in a sample of individuals with anxiety and mood disorders.

In recent years, the importance of more effectively treating comorbid insomnia has become fairly widely acknowledged (Manber et al., 2008; Pollack, Seal, Joish, & Cziraky, 2009). Insomnia and emotional disorders appear to function as mutual risk factors and mutually maintaining conditions (Harvey, 2008; Harvey et al., 2009; Ohayon, 2002; Ohayon & Roth, 2003). Past studies have found baseline insomnia is associated with 2–5 times greater risk of developing mood or anxiety disorders (Breslau, Roth, Rosenthal, & Andreski, 1996; Johnson, Roth, & Breslau, 2006; Paffenbarger, Lee, & Leung, 1994; Weissman, Greenwald, Nino-Murcia, & Dement, 1997). Comorbid insomnia is a negative prognostic indicator: it is associated with increased risk for suicide (Johnson et al., 2006; Paffenbarger et al., 1994); it is the most common residual symptom remaining after treatment of depression (Nierenberg et al., 1999); and it predicts depressive relapse (Morin, 2010; Perlis, Giles, Buysse, Tu, & Kupfer, 1997). For these reasons, improvements in treatments for insomnia in populations with comorbid emotional disorders are expected to confer extensive public health benefits and cost savings (Harvey, 2008; Manber et al., 2008; Pollack et al., 2009).

Present study

This study investigates the relationship among AS, dysfunctional beliefs, fatigue, safety behaviors, and insomnia severity in individuals with emotional disorders. Identifying factors that might underlie or maintain such difficulties across diagnostic categories has important treatment implications. Given the conceptual similarities between recent accounts of insomnia (Harvey, 2002a; Morin, 1993) and models of anxiety (Barlow, 2002), the present study sought to examine whether AS might function as one such factor. It was hypothesized that key sleep-related variables identified in the literature as relating to insomnia (dysfunctional beliefs, fatigue, and safety behaviors) would be associated with insomnia severity in a population with anxiety and mood disorders. In addition, we hypothesized that AS would be positively associated with insomnia severity among individuals with emotional disorders. Finally, it was hypothesized that the relationship between the three sleep-related processes (dysfunctional beliefs, fatigue, and safety behaviors) and insomnia severity would be strongest among those with higher levels of AS.

Methods

Participants ($N = 59$) were recruited from consecutive patients presenting for assessment at the Center for Anxiety and Related Disorders at Boston University (CARD). Thirty-seven participants were female and the average age was 34.93 ($SD = 13.5$, range = 18–74). The sample was predominantly white (96%), with a smaller number of participants identifying as African–American (4%). All participants were assessed by trained interviewers and diagnoses were established with the Anxiety Disorders Interview Schedule for *DSM-IV* – Lifetime Version (ADIS-IV-L; Di Nardo, Brown, & Barlow, 1994). A current anxiety or mood disorder diagnosis was required for inclusion in the study. Overall, 93% of the sample had a current anxiety disorder ($n = 55$), while 22% ($n = 13$) had a current mood disorder diagnosis. No exclusions were made due to comorbid diagnoses. Thus, rates of current clinical diagnoses were: social phobia (SOC; 38%), panic disorder with or without agoraphobia (PD/A; 25%), generalized anxiety disorder (GAD; 25%), specific phobia (SPEC; 22%), unipolar depression (DEP; 22%), obsessive-compulsive disorder (OCD; 16%), anxiety disorder NOS (11%), agoraphobia without panic disorder (3%), eating disorder NOS (3%), posttraumatic stress disorder (PTSD; 3%), and somatoform disorder NOS (3%). Patients also completed a number of self-report measures as part of a larger assessment battery.

Anxiety Sensitivity Index (ASI; Reiss, Peterson, Gursky, & McNally, 1986)

The ASI is a 16-item questionnaire designed to assess fear of anxiety-related symptoms. The ASI consists of three lower-order