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The presence of a perseverative iterative style in poor vs. good sleepers

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ABSTRACT

Catastrophizing is present in worriers and poor sleepers. This study investigates whether poor sleepers possess a 'perseverative iterative style' which predisposes them to catastrophize any topic, regardless of content or affective valence, a style previously found to occur more commonly in worriers as compared to others. Poor ($n = 23$) and good sleepers ($n = 37$) were distinguished using the Pittsburgh Sleep Quality Index (PSQI), from a sample of adults in the general population. Participants were required to catastrophize 2 topics: worries about sleep, and a current personal worry; and to iterate the positive aspects of a hypothetical topic. Poor sleepers catastrophized/iterated more steps to a greater extent than good sleepers to these three interviews, ($F(1, 58) = 7.35, p < .05$). However, after controlling for anxiety and worry, this effect was reduced to non-significance for the 'sleep' and 'worry' topics, suggesting that anxiety may mediate some of the association between catastrophizing and sleep. However there was still a tendency for poor sleepers to iterate more steps to the 'hypothetical' topic, after controlling for anxiety and worry, which also suggests that poor sleepers possess a cognitive style which may predispose them to continue iterating consecutive steps to open-ended tasks regardless of anxiety and worry. Future research should examine whether the presence of this cognitive style is significant in leading to or maintaining insomnia.

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1. Introduction

1.1. Catastrophizing and sleep

Poor sleep has been associated with a range of cognitive styles including catastrophizing, which has been proposed as of likely importance in the aetiology and maintenance of sleep difficulties (Harvey & Greenall, 2003). Catastrophizing is a process wherein individuals iterate the negative aspects of a problem, the outcomes of which are perceived as being progressively worse and of greater concern (Kendall & Ingram, 1987). The term 'catastrophizing' has also been used to describe any thought process which is subject to constant rumination and perseverative iteration (Davey & Levy, 1998). Research in the domain of catastrophic worry in sleep has focused exclusively on catastrophizing about the effects of sleeplessness (Harvey & Greenall, 2003). Individuals with insomnia are known to catastrophize about the effects of sleep loss (Morin, Stone, Trinkle, Mercer, & Remsberg, 1993), but furthermore, it is also known that they have a negative interpretation bias of sleep-related stimuli (Ree, Pollitt, & Harvey, 2006); hold highly

dysfunctional beliefs about their sleep (Morin et al., 1993); ruminate over their poor sleep during the daytime as well as nighttime (Ellis, Mitchell, & Hogh, 2007); and upon awakening and throughout the day become progressively more preoccupied with sleep-related cues (Harvey, 2002). These preoccupations may escalate into catastrophic worrying and anxieties about the sleep deficit, perpetuating the sleep problem. Although this highlights the importance of cognitive processes involved in sleep, it is not clear whether poor sleepers hold a more general cognitive style of rumination which manifests as a tendency to iterate successive steps to any topic not just limited to sleep-related topics, which thus contributes to their sleep deficit.

1.2. Catastrophizing in anxiety and worry

Catastrophic worry has been largely examined in anxiety and chronic worry (for example, see Davey, Hampton, Farrell, & Davidson, 1992; Davey & Levy, 1998, 1999; Vasey & Borkovec, 1992). Davey and Levy (1998) administered the catastrophizing interview (originally introduced by Vasey & Borkovec, 1992, designed to assess the tendency to worry), in order to delineate the factors that contribute to excessive worrying in anxious individuals. The original version of the interview requires participants to catastrophize a current worry, following the questioning format, "What is it that worries you about X?", where X is the participant's current worry.

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The participant is then asked what worries them about the stated worry and so on. Following this procedure, it has been found that chronic worry can predict the number of catastrophizing steps that an individual will generate (Davey & Levy, 1998), and that worriers emit more catastrophizing steps than non-worriers (Vasey & Borkovec, 1992). Furthermore, Davey and Levy (1998) found that worriers have a greater tendency than non-worriers to iterate more steps to positively valenced topics that were relevant to them, and unfamiliar hypothetical topics to which the participants were naïve. This suggests that worriers are not simply preoccupied with a single worry that fuels the catastrophizing process, but that they possess an inherent cognitive style of rumination that causes them to generate further responses to any thought process.

An explanation for these findings is that worriers may exhibit a “what if...?” questioning style (Kendall & Ingram, 1987), since they may have a greater number of responses to “what if...?” questions which are more easy to obtain due to their ruminative tendencies (Davey & Levy, 1998). It is possible that this questioning style is the essence of catastrophizing, and may be what sets catastrophizing apart from regular bouts of worry. The explicit relationship between catastrophizing and worry has received little attention in the literature. However, it is likely that catastrophizing is a sub-type of an overarching construct of worry, since Generalised Anxiety Disorder (GAD), a disorder in which chronic worry is the primary concern (Vasey & Borkovec, 1992), also features catastrophizing as a core symptom. The presence of this ‘perseverative iterative style’ of rumination, i.e. the tendency to persevere at iterating steps to any thought process, may be a fundamental factor responsible for catastrophic worry in anxious individuals.

1.3. Sleep, anxiety, and worry

Individuals with insomnia have a tendency to be anxious and obsessively worrisome (Harvey, 2000), and it is often the case that they experience intrusive, worrisome cognitive activity during the pre-sleep period (Waine, Broomfield, Banham, & Espie, 2009), akin to the worrisome thoughts experienced by chronic worriers, that may perpetuate their sleep problem. Individuals with insomnia score highly on measures of anxiety, worry and neuroticism (Freedman & Sattler, 1982), and so because of this apparent overlap between worry, anxiety and insomnia, we suggest that the factors that maintain the former problems could be similar to those maintaining insomnia. With this in mind, the present study extrapolated questions asked with regards to anxiety and worry, and used them to further understand processes associated with poor sleep. Specifically, we examined the extent to which poor and good sleepers catastrophize about a range of different topics of different affective valence and relevance to the participants in order to determine whether, like worriers, poor sleepers possess a ‘perseverative iterative style’ which fuels the catastrophizing process and perpetuates their sleep deficit. Such information is potentially useful in terms of focusing cognitive behavioural therapy as it will influence whether a therapist addresses catastrophizing about sleep per se, or whether this cognitive process is addressed more generally.

1.4. Research questions

Three main hypotheses were posed in the current investigation. Specifically, poor sleepers as compared to good sleepers will:

- 1) generate more catastrophizing steps to the leading question, “What is it that worries you about nights when you have problems getting to sleep?”;
- 2) catastrophize to a greater extent a current worry; and
- 3) generate more iterative steps to a positive hypothetical topic.

Given the overlap with anxiety and worry, analyses were conducted before and after controlling for anxiety and worry in order to rule out the possibility that we were simply demonstrating that anxiety (a known correlate of poor sleep) was associated with a perseverative iterative style.

2. Method

2.1. Subjects

The present study used a non-clinical sample, focusing on poor sleepers as an analogue of insomnia. This method has been used in previous research where it has been suggested that the processes underlying insomnia exist along a continuum, the processes acting to influence poor sleep at the non-clinical end equivalent to those in people with insomnia, but to a greater extent in the latter (Ree et al., 2006).

A total of 60 participants were recruited from the general population (females, $n = 44$, 73%). Posters were placed in the Psychology Department of Goldsmiths College, in the college library, and in a local doctor's surgery inviting both poor and good sleepers to contact the first author if they wished to participate, in return for entrance into a prize draw. The participants' ages ranged from 20 to 76 years ($M = 37.65$ yrs; $SD = 15.14$ yrs). The majority of the sample was Caucasian (96.6%). The sample comprised of 21.7% students, 76.6% were employed full-time and 1.7% unemployed.

2.2. Materials

2.2.1. Sleep quality

The ‘Pittsburgh Sleep Quality Index’ (PSQI) (Buysse, Reynolds, Monk, Berman, & Kupfer, 1989), is a 19 item self-report questionnaire which assesses sleep quality and sleep disturbances over a 1 month period, focusing on subjective sleep quality, sleep onset latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medication and daytime dysfunction. The total score has a range of 0–21 with higher scores indicating poorer sleep. Poor sleepers are identified by scores > 5 . This cut-off has been found to yield 89.6% diagnostic sensitivity in distinguishing poor and good sleepers (Buysse et al., 1989). Using this cut-off, in our sample there were 23 poor sleepers (38%) (PSQI score: $M = 9.26$, $SD = 2.62$); and 37 (62%) good sleepers (PSQI score: $M = 3.00$, $SD = 1.51$).

2.2.2. Anxiety and worry

Anxiety was measured using the ‘State–Trait Anxiety Inventory’ (STAI) (Spielberger, 1983), a 40 item self-report questionnaire which determines the extent of anxiety at the present moment – state anxiety ($\alpha = .79$ for the present sample); and the extent of anxiety felt generally – trait anxiety ($\alpha = .85$ for the present sample). Scores range from 20 to 80 for each construct separately, higher scores indicating greater subjective anxiety. Previously, this measure has been found to be reliable at measuring trait anxiety ($\alpha = .65$ – $.86$), yet somewhat less reliable at measuring state anxiety ($\alpha = .16$ – $.62$) (Spielberger, 1983). However, this low level of alpha for state anxiety is expected, since the influence of transient situational factors present at the time of testing are thought to be reflected within this measure (Spielberger, 1983).

The ‘Penn State Worry Questionnaire’ (PSWQ) (Meyer, Miller, Metzger, & Borkovec, 1990), a 16 item self-report questionnaire designed to assess clinically significant pathological worry, with scores ranging from 16 to 80 (with higher scores indicative of high worry), was administered as a measure of trait worry. This measure has previously been found to have good test–retest reliability

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