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Trait anxiety and sleep-onset insomnia Evaluation of treatment using anxiety management training

Marcel Viens, Joseph De Koninck*, Pierre Mercier, Mélanie St-Onge, Dominique Lorrain

School of Psychology, University of Ottawa, C.P. 450 Stn. A, Ottawa, Ontario, Canada

Abstract

Objectives: This study was initially designed to test the notion that generalized anxiety is a predominant factor in the maintenance of psychologically determined sleep-onset insomnia and that a trait anxiety reducing technique can provide significant therapeutic gains. **Methods:** Twenty participants (age 19–63) with moderate to severe sleep-onset chronic insomnia were first asked to monitor their sleep-onset latency (SOL) for a 3-week baseline period at home using a SOL clock device. Then, 10 received anxiety management training (AMT) for 9 weeks, while the remaining 10 were trained in the use of progressive relaxation (PR). All participants were measured before and after therapy using sleep laboratory recordings (three nights each), the Spielberger Trait Anxiety Inventory and the Beck Depression Inventory. Daily home sleep-onset measures with the SOL clock device were also taken during therapy. **Results:** There was no change in SOL over the 3-week baseline period. However, both groups experienced a significant improvement in SOL from pretreatment (end of baseline) to posttreatment periods. In the laboratory, both groups experienced a reduction in Stage 1 sleep as well as an increase in slow wave sleep (SWS) and sleep satisfaction. On the personality measures, both groups experienced a significant reduction in trait anxiety and a decrease in depression. Overall, there was no indication that one of the therapies was significantly better than the other in effecting changes. **Conclusion:** These results suggest that both PR and AMT are efficient therapies for sleep onset insomnia and overall sleep quality. Improvements in the application of the AMT technique are proposed to maximize its usefulness.

Keywords: Insomnia; Anxiety management training; Anxiety; Relaxation

Introduction

Research on the nonpharmacological treatment of insomnia has confirmed the short and long term benefits of several behavioural techniques. Such therapies have taken a wide variety of forms. Indeed, progressive and autogenic relaxation [1–3], systematic desensitization [4], paradoxical intention [5–7], sleep restriction therapy [8–10], stimulus control [11,12] and biofeedback [13,14] are all examples of successful techniques to alleviate symptoms of sleep-onset insomnia. They have become preferred alternatives to drug therapies [15,16]. Several reviews are available (e.g., Refs. [17,18]). More recently, their combination with new hypnotics appears most successful [19]. These approaches focus on eliminating competing behaviours and reducing levels of anxiety present at bedtime.

Several studies have linked insomnia with the presence of increased general trait anxiety [20–22]. It appears that, at least in certain conditions, life-stress factors are prevalent and cause or exacerbate chronic insomnia. Learning to cope with these life-stress events would contribute to a more global solution for the treatment of insomnia. More specifically, it would follow that treatment, which includes a reduction of trait anxiety, would be even more efficacious in alleviating symptoms associated with sleep-onset insomnia than therapies that focus only on bedtime conditions. In this study, such a treatment, anxiety management training (AMT) [23,24] which has been shown to reduce trait anxiety, was compared to Jacobson's [25] progressive relaxation (PR). It was predicted that AMT would lead to a greater reduction in trait anxiety, sleep-onset latency (SOL) and negative psychological correlates of insomnia than PR.

* Corresponding author.
E-mail address: jdekonin@uottawa.ca (J. De Koninck).

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Method

Participants

Following invitations on radio, television and local newspapers, over 200 individuals responded to our call for participants in the study. Of these, 47 fulfilled the preliminary requirements (as determined in a phone interview) and were subsequently invited for a personal assessment interview. It was important to exclude individuals whose insomnia was not strictly psychological. As a first step, a thorough sleep behaviour questionnaire combined with an in-depth interview was used in an attempt to assess the specific cause of the sleep disorder. This allowed a first screening out of a history of many types of sleep-onset problems caused by physiological deficiencies (i.e., sleep apneas, periodic leg movements during sleep (PLMS) and so on). Twenty subjects were retained and completed the MMPI in order to further help to exclude persons presenting signs of severe psychological and psychiatric disorders. More specifically, candidates presenting abnormal values on the scales other than anxiety were excluded. Those exhibiting overuse of drugs and/or alcohol were not retained. Potential candidates using sleeping medication were required to withdraw from their medication for at least a month prior to the experiment. Finally, in order to ensure that participants were experiencing a relatively high level of trait anxiety, a score situated above the 60th percentile on the trait dimension of Spielberger's State-Trait Anxiety Inventory (STAI) was required. This brought down the number of subjects to 27.

Sleep-onset insomnia was considered at least moderate if there was a SOL greater than 45 min at least four nights per week. To provide a preliminary assessment of sleep latency, a special switch-activated clock [26] was used by the participants at home for 1 week prior to final selection. Each daily SOL was recorded and returned to the experimenter for analysis. It was expected that participants with moderate to severe insomnia would present not only sleep-onset delays but also frequent nocturnal awakenings. This, in turn, warranted the use of polysomnographic measures in order to assess the level of sleep efficiency at the different stages of the study. Four subjects were excluded because they presented more than five PLMS.

Applying the above criteria 23 subjects were invited to participate in the study. Two dropped out before the end of the experiment and one was dropped for use of hypnotics. The remaining 20 subjects who complied with all the components of the study ranged in age between 19 and 63 years old. When asked during their personal interview "how long does it take you to fall asleep?," the average response was 92 min (S.D. = 45.5). In addition, these insomniacs averaged around 5.5 h (S.D. = 1.05) in total sleeping time as assessed subjectively at home. Finally, when queried about the last time when they had a good night sleep, eight respondents stated that they did not remember, while the remaining participants estimated an average of 20 days.

Procedure

In order to minimize a priori differences, participants were matched for sex, age, level of insomnia and anxiety on assignment to one of two treatment groups (10 in each). The anxiety management group had four males and six females (mean age = 35.7), and the PR group, two males and eight females (mean age = 36.1). This matched assignment was carried out by an independent specialist who was unaware of the hypothesis of the study. Participants were then brought into the laboratory for one night to obtain the polysomnographic screening measures.

The selected participants were told that a waiting period of approximately 3 weeks was necessary. During that period, they were instructed to keep a daily log of their sleep activities and their varying levels of sleep satisfaction using a short self-report questionnaire in addition to the SOL clock. After the 3-week period, they returned to the lab for psychological and polysomnographic baseline measures for three consecutive nights. The MMPI and the STAI were completed on the eve of the first night, which also served as habituation to the laboratory. Polysomnographic data was collected during the next two nights. Following this, the two experimental groups received their respective treatment program (details presented below).

Throughout the baseline and treatment periods, the participants were seen once every 2 weeks in order to encourage compliance and collect data. Finally, the two groups returned to the laboratory for three nights for the final psychological and polysomnographic measures.

Treatments

One male and one female doctoral students in their late 20s and nearing the end of their PhD program acted as therapists in this study. They were trained in the administration of the two therapeutic approaches and were randomly assigned participants to whom they applied the treatment. Thirteen participants (seven PR and six AMT) were treated by the male therapist, while the remaining seven (three PR and four AMT) were seen by the female therapist. The therapists had strict instructions not to overstep the boundaries prescribed by the technique itself. Thus, their role was to simply reiterate the instructions contained in the original cassette used during the initial session. One of the therapists was aware of the details of the study and the other one was not. No therapeutic effect was observed between the two therapists.

Progressive relaxation

The members of the first treatment group were individually taught PR using live instructions from one of two participating therapists. Then, for a period of about 9 weeks, they were asked to use a tape-recorded version of the first relaxation session, which lasted close to 30 min. This tape was to be practised twice daily, once during the day and the