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# Relaxation therapy for insomnia: nighttime and day time effects

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## Abstract

We compared day time functioning in college students with and without insomnia and explored changes in day time functioning after progressive relaxation (PR) treatment for insomnia. Students with insomnia (SWI;  $n = 57$ ) were compared to a control group of students not complaining of insomnia (SNI;  $n = 61$ ) on self-reported sleep variables and five questionnaires: Insomnia Impact Scale (IIS), Dysfunctional Beliefs and Attitudes About Sleep Scale (DBAS), Epworth Sleepiness Scale (ESS), Fatigue Severity Scale (FSS), and Penn State Worry Questionnaire (PSWQ). SWI demonstrated significant impairment on all day time functioning and sleep measures compared to SNI. To investigate treatment effects on day time functioning, 28 SWI were randomly assigned to PR. Treated SWI were compared to untreated SWI and SNI at posttreatment. Treated participants improved sleep in comparison to untreated SWI, but failed to show significant improvements in day time functioning. Insomnia treatments focused on improving sleep may not improve day time functioning, or day time gains may emerge more slowly than sleep gains. This study documents the wide range of day time functioning complaints in young adults with insomnia and suggests that the goal of insomnia treatment should be to not only improve sleep but also to improve the subjective experience of day time functioning. © 2000 Published by Elsevier Science Ltd. All rights reserved.

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## 1. Introduction

People with insomnia (PWI) complain not only of poor sleep but impaired day time

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functioning as well. Insomnia can negatively impact physical, emotional, cognitive, occupational, and social spheres of one's life (Morin, 1993). Compared to people without insomnia, PWI report more physical and mental health problems, greater usage of medical services, and more frequent hospitalizations (Bixler, Kales, Soldatos, Kales & Healey, 1979; Ford & Kamerow, 1989; Kales et al., 1984; Mellinger, Balter & Uhlenhuth, 1985). They are lonelier, less satisfied with life, less active in work and social activities, and more likely to be depressed than people without insomnia (Ford & Kamerow, 1989; Kales et al., 1984; Marchini, Coates, Magistad & Waldum, 1983). Work performance of PWI may be negatively impacted by reduced productivity and higher absenteeism rates. One study found that self-described 'poor sleepers' in a Naval school performed less effectively, received fewer career promotions, and were more likely to drop out than good sleepers (Johnson & Spinweber, 1983).

Although the data on performance variables is inconsistent, PWI may have specific deficits in psychomotor and/or cognitive functioning (Mendelson, Garnett, Gillin & Weingartner, 1984; Mendelson, Garnett & Linnolla, 1984; Schneider-Helmert, 1987; Sugarman, Stern & Walsh, 1985). For example, Mendelson et al. (1984) found PWI to have a specific impairment in semantic memory, which may be subjectively experienced as an inability to think clearly. PWI also commonly complain of day time sleepiness, although objective tests of sleepiness such as multiple sleep latency tests (MSLT) and pupillometry have failed to corroborate this complaint (Chambers & Keller, 1993; Lichstein, Johnson, Gupta, O'Laughlin & Dykstra, 1992; Seidel et al., 1984).

Although PWI perceive insomnia to adversely affect a broad spectrum of their lives, the impact of insomnia on day time functioning has received little attention in the clinical outcome literature. Treatments for insomnia typically address the subjective complaint of poor sleep, assuming that when sleep is improved, improvements in day time functioning will follow. However, an alternative view shifts the focus to day time functioning for the purpose of estimating the clinical significance of insomnia. The extent to which one's life is affected by poor sleep can be estimated by the assessment of day time functioning. The results of such assessment may bear heavily on determining whether a sleep intervention is needed and the nature of that intervention.

College students may be particularly susceptible to detrimental day time effects of insomnia. Academic pressures and poor sleep habits (e.g. excessive caffeine or alcohol use, variable bedtimes, day time napping) can instigate or aggravate insomnia. Insomnia may be more prevalent in college students than other young adults, with one study reporting insomnia in 17% of randomly selected psychology undergraduates (Lichstein, 1983). College students also may be experiencing increasingly unsatisfying sleep in general. One research group found that sleep complaints of college students rose over a ten year period, suggesting that both the quality and quantity of self-reported sleep is decreasing in this population (Hicks, Mistry, Lucero, Lee & Pellegrini, 1989; Hicks, Pellegrini, Hawkins & Moore, 1978).

The first objective of the present study was to explore day time functioning differences between college students with insomnia (SWI) and students not complaining of insomnia (SNI). Students were compared on self-reported sleep variables and five day time functioning questionnaires: Insomnia Impact Scale (IIS), Dysfunctional Beliefs and Attitudes About Sleep Scale (DBAS), Epworth Sleepiness Scale (ESS), Fatigue Severity Scale (FSS), and Penn State Worry Questionnaire (PSWQ). Because these questionnaires typically have not been used in

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