# The effects of sleep quality, sleepiness, fatigue, and psychological resilience on attention performance

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Abstract

Introduction: The aim of the study was to examine the relationships between sleep quality, sleepiness, fatigue, resilience, and attention parameters in a sample consisting of university students.

Material and methodic The study involved 125 university students aged between 18 and 35 years. A sociodemographic data form, the Pittsburgh Sleep Quality Index (PSQI), Epworth Sleepiness Scale (ESS), Fatigue Severity Scale (FSS), Depression, Antiety, and Stress Scale (DASS 21), and the Beief Resilience Scale (BRS) were administered to the participants. Attention assessment was conducted using the Cognitrone (COG), Signal Detection (SIGNAL), Inhibition (ENHIB), and Perception and Attention Functions Battery, part of the computerbased Victura Test System (VTS).

Results: Out of all the participants, 77.2% were female, and 22.8% were male, with an average age of 21.53 (SD = 2.54) years. A postaire correlation was found between COG-Corrects and PSQI scores, and COG-Incorrects and DASS-Stress. There was a negative correlation between SIGNAL-Corrects and FSS. No correlation was revealed among sleep quality, sleepiness, fatigue, resilience variables, and reaction inhibition or divided attention. Furthermore, multiple regression analysis indicated that attention scores were predicted only by sleep quality and fatigue severity.

Conclusions: Based on the study's findings, it is conceivable that situational factors such as sleep quality, sleepiness, and fatigue have a more significant impact on attention compared with commant variables such as depression, anxiety, stress, and resilience.

Key words: Vienna Test System, attention, fatigue, sleepiness, resilience.

#### Introduction

Attention is a primary and complex cognitive function that refers to the frontage and focus of mental resources on a stimulus. Simultaneously, it represents turning towards a stimulus while disregarding others (Posner et al. 2016). Attention is separated into four types: selective, sustained, executive, and divided. Selective attention refers to the capacity to focus on a particular stimulus while disregarding other distracting stimuli. Divided attention is the ability to deal with multiple stimuli simultaneously, and executive attention ensures that attention is maintained (Rueda et al., 2023). Sustained attention requires long-term focus on a stimulus and is regarded as a concept associated with alertness (Cohen 2013). According to contemporary theories, attention is a system that consists of multiple brain networks with interrelated but distinct functions (Fisher 2019). Spikman and van Zomeren (2010) stated that attention has two general dimensions, selectivity and intensity; they also refer in their articles to the Vienna Test System (VTS), which is a computer-based application used in the assessment of sustained attention, focused/selective attention, and divided attention (Spikman and van Zomeren 2010).

Although attention is a parameter that multiple psychological factors can impact, there has been more focus on how specific psychological processes such as sleep, fatigue, and psychopathological processes (e.g., depression, anxiety) affect attention. Sleep has a restitutive function in human life and is essential for physiologic and circadian rhythms. Quantitative and qualitative shifts in sleep influence multiple systems (Bryant

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thing to recognize that fatigue is a critical safety issue it is quite another to set up a successful scientifically informed fatigue risk management programme This book is here to help It has been carefully designed as a comprehensive reference point bringing together international expertise from leaders in fatigue science and showcasing valuable insights from transportation industry practitioners The 40 authored chapters are divided into six sections to better understand fatigue science the consequences of fatique in transportation contributors to fatique managing fatique and promoting alertness real world case studies of fatigue management in practice and future perspectives While it is possible to read each chapter in isolation most will be gained by reading the book as a whole Each chapter starts with an abstract overview and concludes with summary bullet points creating a handy quick check for key points This accessible text is for those who are interested in supporting alert and safe transportation operations It is suitable for professionals transport managers government advisors policy makers students academics and anyone who wants to learn more All transport modes road rail maritime and aviation are considered For anyone waking up to the complex challenge of fatigue management this handbook is a must **Report** United States. National Transportation Safety Board, 1999 During the 1980s the National Transportation Safety Board investigated several aviation highway and marine accidents that involved operator fatigue Following completion of these investigations the Safety Board in 1989 issued three recommendations to the U S Department of Transportation DOT addressing needed research education and revisions to hours of service regulations. In the 10 years that have passed the Safety Board has issued more than 70 additional recommendations to the DOT States industry and industry associations to reduce the incidence of fatigue related accidents In response to the three 1989 recommendations the DOT and the modal administrations have in general acted and responded positively to those addressing research and education little action however has occurred with respect to revising the hours of service regulations Nevertheless the Safety Board believes that support has grown in recent years to make substantive changes to these regulations. This report provides an update on the activities and efforts by the DOT and the modal administrations to address operator fatigue and consequently the progress that has been made in the past 10 years to implement the actions called for in the three intermodal recommendations and other fatigue related recommendations. The report also provides some background information on current hours of service regulations fatigue and the effects of fatigue on transportation safety As a result of this safety report the National Transportation Safety Board issued new safety recommendations to the U S Department of Transportation the Federal Aviation Administration the Federal Highway Administration the Federal Railroad Administration the Research and Special Programs Administration and the United States Coast Guard The Safety Board also reiterated two recommendations to the Federal Aviation Administration Human Performance Optimization Michael D. Matthews, David M. Schnyer, 2019 Human Performance Optimization The Science and Ethics of Enhancing Human Capabilities explores current and emerging strategies for enhancing individual and team performance especially in high stakes stressful settings such as the military law

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