DRIVING THE POINT HOME: SLEEPINESS AND FATIGUE AS INDEPENDENT PREDICTORS OF DRIVING BEHAVIOURS, WELLBEING, AND SLEEP QUALITY

SLEEP EUROPE

27th Congress of the European Sleep Research Society
Seville, Spain | 24 – 27 September 2024

Authors and affiliations: F. Pilkington-Cheney[1]*, P. Goodwin[1], Y. Taylor[2], A. Adkar[1] & J. A. Groeger[1]

1Department of Psychology, School of Social Sciences, Nottingham Trent University; 2National Police Wellbeing Service
* Contact: fran.pilkington-cheney@ntu.ac.uk, @Franpilkington

Overview

- The SleepiEst project at Nottingham Trent University, UK is funded by the Road Safety Trust and aims to develop a shift-scheduling tool to predict sleepiness across shift patterns.
- Sleepiness and fatigue are separate states, but the terms are often confused in literature.
- The aim was to explore the prediction of sleep, wellbeing and driving by sleepiness and fatigue. The rationale was to better understand how these states relate and so that we might reduce related road-collisions.
- To explore these effects, the project recruited UK Police officers with shift-working patterns in a cross-sectional type of study.
- The results of the multiple regression analysis show that although sleepiness and fatigue are correlated, they independently predict various health, wellbeing and driving measures.

Introduction

- Sleepiness and fatigue are important considerations for workplace safety, particularly for shift workers.

- Shift work is associated with poor sleep (e.g., Mabry, 2022), fatigued driving (e.g., Maynard et al., 2021) and road collisions (e.g., Knott et al., 2020).

- Within the literature, sleepiness and fatigue have distinct definitions. Despite this, the terms are used interchangeably and often confused.

- The study explored how individuals' self-reported sleepiness and fatigue predicted outcome variables of sleep quality, health and wellbeing, and driving performance.

Method

A large online survey was conducted across UK police forces. The design of the study was cross-sectional. Respondents were recruited via National Police Wellbeing Service communications to individual police forces.

Participants

Sample:
4513 Police employees

Demographics
42% female, 58% male; <1% Not given

Mean age: 39.21 (±10.52)

Materials

Predictor Measures:
Sleepiness: daytime sleepiness (ESS)
Fatigue: adapted Situational Fatigue Scale

Outcome Measures:
Sleep: Quality (PSQI);
Wellbeing: Health (SF36) Anxiety & Depression (HADS)
Driving Performance: Behaviour (DBQ)

Analysis

Multiple Linear Regressions were conducted to explore the relationships between sleepiness and expected fatigue with driving and wellbeing measures.

Table 1: Proportion of variance explained by Sleepiness and Fatigue

Domain	Outcome	Sleepiness R^2	Sleepiness and Fatigue R^2
Sleep	Sleep Quality	.10	.18
Wellbeing	Perceived Stress	.07	.16
Wellbeing	Health	.08	.23
Driving	Lapses	.10	.20
Driving	Errors	.05	.12
Driving	Violations	.03	.07

Results

- A total of 2219 participants' data was considered for further analysis.

- Sleepiness and fatigue were found to be correlated ($r = 0.37$).

- Independently however, the sleepiness and fatigue measures predicted scores for poor sleep, poor driving behaviours, perceived stress, and general health ($ps < .001$).

- Individual R^2 values can be seen in the Table 1 (left).

Conclusions

- Sleepiness and fatigue are separate states and independently predicted measures of wellbeing, poor sleep and driving behaviours,
- Terms should not be confused in relations to managing and predicting their risk – especially in safety critical professions
- Understanding difference of states helps to predict sleep/fatigue risk.

This ultimately has the potential to reduce the risk of road crashes and workplace incidents causes by sleepiness and/or fatigue.

References

The National Police Wellbeing Service
OSCAR KILO

NTU Nottingham Trent University

SleepiEst

THE ROAD SAFETY TRUST Making Roads Safer