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Setting a baseline for cognitive fatigue in student pilots

A thesis presented in partial fulfilment of the requirements for the degree of

Master of Aviation

at Massey University, Palmerston North, New Zealand

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2013

Abstract

Despite fatigue being an important topic in many areas of aviation, little is known about its occurrence and effects amongst student pilots. The purpose of this study is to examine cognitive fatigue in the flight training environment with the goal of setting a baseline for fatigue accumulation over the course of a one hour training flight.

The study was divided into three sections. Firstly, information was gathered on the numbers and distribution of student pilots across New Zealand, and this resulted in a decision that research would proceed with students at a single large flight training organisation. Next, a search was undertaken for pre-existing tools that could be modified and refined to be made suitable for use in the flight training environment. A questionnaire and reaction time test were then created and successfully validated in a pilot study. Finally the main body of the study comprised using the two tools to test a non-probability sample of 21 student pilots, split between a main group and a control group. The data were then collated and analysed to determine the level of fatigue which accumulated, assess correlations between variables, and evaluate the significance of the results.

Results were overall satisfactory, with the questionnaire returning some of the most useful and significant data. Significant levels of fatigue were detected amongst participants, but it could not be exactly determined how this would affect performance. Several significant correlations were discovered between different variables, which served to both reinforce existing knowledge on the topic, and further confirm the validity and reliability of the tools. While the study was somewhat limited in its approach and scope, it is relatively ground-breaking, and creates the potential for further research in this area.

Acknowledgements

I would like to acknowledge the contribution of my supervisor Dr Jose Pérezgonzález, his knowledge and guidance has been invaluable to the process of completing this study.

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