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Massey University

Situational Awareness of Pilots in the
Cruise

A Thesis by Nicholas Vincent

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Palmerston North New Zealand

Abstract

Situational Awareness is a corner stone of flight safety; a flight crew or single pilot must be situationally aware to allow the flight to operate without incident and to detect any failure or faults as soon as practically possible. This gives pilots the greatest length of time to respond and then either resolve the issue, or minimize escalation. This research explores whether the implementation of a checklist is beneficial during a portion of the flight when there is low outside stimulation for the pilot. The research takes a practical approach, attempting to find not just an effect but a meaningful effect that could potentially improve safety in a real-world scenario. In accordance with this, Fisher's significance testing is used, and while the results are statistically interpreted using this method, Bayes factors are also used in an attempt to provide a more relevant answer to the research's endeavor to find a way to meaningfully increase flight safety.

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Contents

1	Introduction	8
	1.1 Introduction	8
2	Literature Review	10
	2.1 Situational Awareness	10
	2.2 Other Areas of Situational Awareness	14
	2.3 Individual Effects of Situational Awareness	17
	2.4 Automation	21
	2.5 Checklist	21
	2.6 Variables that can Affect Situational Awareness	23
	2.6.1 Experience	23
	2.6.2 Fatigue	24
	2.7 Research Objectives	24
3	Experiment and Methods	25
	3.1 Experiment	25
	3.2 Participants	25
	3.3 Materials	26
	3.4 Design and Procedure	27
	3.5 Design of Questionnaire	29
	3.6 Questionnaire	30
	3.7 Checklist	32
	3.8 Variables	36

3.8.1 Experience	36
3.8.2 Fatigue	37
3.9 Simulation compared to Real Life	38
3.10 Ethics	39
3.11 Data Analysis	40
3.11.1 Fisher’s Tests of Significance	41
3.11.2 Jeffreys’s Bayes Factors	43
4 Results	46
4.1 Static SA	46
4.1.1 Static SA Test of Significance	47
4.1.2 Bayes Factor Analysis	48
4.2 Active SA	49
4.2.1 Active SA Significance Testing	50
4.2.2 Bayes Factors Active SA	51
4.2.3 Active SA Two Tailed Analysis	52
4.3 Continual SA	53
4.3.1 Continual SA Significance Testing	54
4.3.2 Bayes Factors Continual SA	55
4.4 Timing SA	56
4.4.1 Timing SA Significance Testing	57
4.4.2 Bayes Factors Timing SA	58
4.5 Variables	59

5 Discussion	60
5.1 Discussion	60
5.2 Limitations	64
5.3 Recommendations	64
5.4 Conclusion	66
References	67
Appendix	70

Chapter 1

Introduction

1.1 Introduction

Situational Awareness (SA) in the cockpit is a vital part of flight safety and efficiency. The Situational Awareness exhibited by the flight crew of an aircraft works to keep the aircraft flying in the most efficient way possible, keeping the aircraft on track and ensuring that all procedures are taken into account and future events are planned for. This efficiency allows the aircraft to be operating for the most profit, or minimalized cost, in a commercial situation. This Situational Awareness also extends to the safety of the aircraft. The ability to identify failures and changes from the expected while in flight is a large part of its safe operation, allowing more time to react to a situation and more time for the crew in a high workload situation. Situational Awareness is important to aviation and therefore increasing it would be valuable.

The research was based on the idea of increasing the Situational Awareness in the cockpit. It used a newly designed checklist to increase a pilot's SA, compared to pilots not using the checklist. This paper will also review Situational Awareness itself, and break it into its various components to define it and identify areas that can be improved in flight. The checklist will be designed to increase SA in those identifiable areas.

A cost-effective way to conduct the experiment was developed, taking into account the portability required that would allow for the application of the experiment to be transported around the upper and mid North Island of New Zealand, to reach flight schools in those areas.

Also taken into account was the practicality of allowing for minimal cost to simulate an inflight situation.

The overall research hypothesis is that the checklist has a positive result on the Situational Awareness of pilots.