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EXPLORING THE INFLUENCE OF TIME PRESSURE ON DECISION-MAKING BY AIRLINE 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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ABSTRACT

Decision-making errors have figured predominantly in many aviation accidents; often these have been due to stress and time pressure in solving a problem. The purpose of this study was to investigate the perceived effect of time pressure on airline pilots in decision-making. Specifically, the aim of the study was to improve the understanding of the influence of experience, crew position, confidence, perception of safety, stress, and training on decision-making by airline pilots. The study utilized an experimental design and survey methodology among a purposive sample of airline pilots. Evidence was found in the study to suggest that time pressure influences decision-making. Additionally, there was a significant lowering of decision-making ability in co-pilots with low experience when subjected to time pressure. An unexpected finding was the airline crew utilizing a decision-making model appeared to have no advantage over those who did not utilize decision-making model. Time pressure did not appear to influence post-decisional confidence in decision quality. Use of decision-making models did not have any positive impact on decision outcome. This finding may be due to the survey design in presenting sufficient diagnostic cues to participating pilots to draw on their experience and make better decisions. However, post-decisional safety perception was significantly affected by time pressure. Lastly, the findings from the present study suggested that the pilots with low experience seemed to suffer significantly on decision-making ability when under time pressure. The implications of these findings are discussed further.
ACKNOWLEDGEMENTS

I would like to thank my supervisor, Dr. A. Gilbey, for his advice, guidance and support during this study. Dr. Gilbey’s primary focus of research is on aviation decision-making.

I would also like to thank my wife, Sue, sons, Akhil and Kelly and daughter-in-law Meredith for their patience and support.

I would also like to thank the participating airlines who have accorded approval and chose to be a part of this research.

Lastly, I would like to express my sincere appreciation to all the participants without whose participation, this study would not have been possible.
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<td>Air Accidents Investigation Board</td>
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<tr>
<td>ADM</td>
<td>Aeronautical Decision-Making</td>
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<tr>
<td>ANOVA</td>
<td>Analysis of Variance</td>
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<tr>
<td>ASN</td>
<td>Aviation Safety Network</td>
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<td>ASRS</td>
<td>Aviation Safety Reporting System</td>
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<tr>
<td>ATSB</td>
<td>Australian Transportation Safety Bureau</td>
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<tr>
<td>CAA</td>
<td>Civil Aviation Authority</td>
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<td>Civil Aviation Procedures</td>
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<td>CRM</td>
<td>Crew Resource Management</td>
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<td>DAAIB</td>
<td>Dutch Aviation Accident Inquiry Board</td>
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<tr>
<td>FAA</td>
<td>Federal Aviation Administration</td>
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<td>FAA AC</td>
<td>Federal Aviation Administration Advisory Circular</td>
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<tr>
<td>FORDEC</td>
<td>Facts, Options, Risks, Decide, Execute, Check</td>
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<td>ICAO</td>
<td>International Civil Aviation Organization</td>
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<td>MUHEC</td>
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<td>NDM</td>
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<td>NTSB</td>
<td>National Transportation Safety Bureau</td>
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<tr>
<td>RPD</td>
<td>Recognition Primed Decision-Making</td>
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<tr>
<td>SPSS</td>
<td>IBM Statistical Software Package</td>
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