Examing the predictive validity of the WOMBAT situation awareness pilot selection test

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1. Introduction

Selection of candidates who are most likely to successfully complete flight training is an important economic and safety issue in aviation. One test which is used frequently as part of the process for selecting candidates for pilot training is the WOMBAT-CS (Wonderous Original Method of Basic Airmanship Testing - Complex Systems Operators). The WOMBAT-CS is a computerised test designed to measure the situation awareness, stress tolerance and attention management abilities of complex system operators (Roscoe, Corl and LaRoche, 2001). WOMBAT-CS incorporates a range of individual tasks that primarily involve target tracking, spatial orientation, pattern recognition and short-term memory. Multiple sources of information and multiple response alternatives are presented, in response to which attention must be prioritised and allocated efficiently.

Despite widespread use in over 40 countries by many airlines, as well as in selecting other complex system operators (eg. nuclear power plant operators), little information is available on the validity of WOMBAT as a pilot selection test. O’Hare (1997) found that a sample of 8 elite glider pilots scored consistently higher on the WOMBAT-CS than regular experienced pilots, who in turn scored higher than non-pilot control participants. These results were interpreted as suggesting that WOMBAT predicts pilot performance. In addition, in a sample of 24 non-pilots, WOMBAT scores were found not to be a function of a range of cognitive abilities (such as mental rotation or digit recall), experience with computer games, age, or occupation. This was interpreted as meaning that WOMBAT scores represent something over and above the measured cognitive abilities (O’Hare, 1997). While other studies have used WOMBAT as a measure of cognitive performance under various conditions, such as sleep deprivation (e.g. LeDuc et al. 1999), little other data are available that link WOMBAT performance to flying performance in a larger sample with a range of performance indices. This is of concern when the test is being used to select pilot candidates.

This study aims to examine the predictive validity of the WOMBAT-CS test in a sample of ab-initio student pilots.

2. Method

30 ab-initio student pilots at the University of New South Wales’ Flight Operations Unit will be tested on WOMBAT-CS before commencing their flight training. WOMBAT total scores, and subtest component scores will be correlated with instructor ratings of flight performance throughout the training regime, as well as with performance metrics from the FRASCA DA-40 simulator.

3. Results

Results will be discussed in terms of the demographic profile of the sample and their WOMBAT-CS performance; and the relationship between WOMBAT-CS component scores and flight performance indices.
4. Discussion

The predictive ability of a personnel selection test is the key element of its utility. Establishing and publishing data on the predictive validity of such tests is important for ensuring robust selection decisions, maintaining confidence in the selection process, and ensuring safety.

4. Keywords: personnel selection, training, validity, aviation,

5. References: