

The effect of complacency potential on human operators' monitoring behaviour in aviation

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Abstract

Working environments are becoming more and more automated. Therefore, operators must be able to monitor the automated processes accurately and efficiently. Since the German Aerospace Centre's Department of Aviation and Space Psychology is responsible for selecting pilots and air traffic control personnel, our objective for future selections is to distinguish between operators monitoring well and those monitoring poorly. By identifying accurate monitoring behaviour we are able to adapt selection profiles to future ability requirements. In order to identify good monitoring behaviour, we developed a tool which simulates the tasks of pilots and controllers within a dynamic air traffic flow. Participants either have to monitor the automatic process or manually control the dynamic traffic. Monitoring behaviour is measured by recording eye movement parameters and performance during the manual control phase is assessed. Additionally, the effect of complacency potential as a moderator of both monitoring behaviour and manual controlling behaviour was examined. Although technology-related complacency was found to have no effect, tolerance of ambiguity indeed were found to have an effect on manual controlling behaviour. Additionally the subjects' conscientiousness moderated the effect of monitoring behaviour on manual controlling behaviour.

Future ATM requirements on human operators

With the Single European Sky ATM Research (SESAR) Program, a high-performance Air Traffic Management (ATM) infrastructure will exist in Europe. Thus, technical innovations in aviation as well as improvements in ATM, aircraft systems and organizational structures, are all great challenges facing aviation in the 21st century. The project 'Aviator 2030' deals with changes that will concern pilots and air traffic controllers in the future, with the objective of adapting selection profiles to suit future ability requirements. Workshops were conducted with experienced pilots and air traffic controllers in order to gather their expectations about their future tasks, roles and responsibilities. To summarize the workshop results: monitoring and teamwork in a highly automated workplace will pose challenges to future aircraft operators (Bruder et al., 2008). In the future, operators will have to monitor the dynamic process of automated systems. In the event of a system failure, they will have to control the system manually. Consequently, research should focus on the ability to monitor as one of the new core competencies

In D. de Waard, N. Gérard, L. Onnasch, R. Wiczorek, and D. Manzey (Eds.) (2011). *Human Centred Automation* (pp. 133 - 144). Maastricht, the Netherlands: Shaker Publishing.