Human Factors

research and technology division

Prospective Memory

Objective

In aviation, as in many workplace and everyday settings, people must remember to perform intentions that are deferred; for example, pilots must remember to follow ATC instructions for changes in fight path that are to be made later in a flight. Remembering to perform deferred intentions is called prospective memory. Many memory errors in real-world operations fall into this category, yet only recently have scientists begun studying the cognitive processes that underlie this aspect of memory. In this project we analyze the types of prospective memory demands pilots and controllers encounter, and the circumstances in which they are vulnerable to memory errors. We will provide methods individuals can use to reduce their vulnerability to this form of error.

Approach

We analyze NTSB accident reports and ASRS incident reports to characterize prospective memory demands and the circumstances that contribute to errors. These analyses guide our laboratory experiments and theoretical modeling in which we are collaborating with university scientists seeking to elucidate the cognitive processes involved in remembering to perform intentions. The laboratory studies allow us to design techniques individuals can use to reduce vulnerability to this form of error. These studies also provide a foundation for guidelines for operational procedures to improve the skills and performance of pilots and other personnel.

Impact

Our findings will alert the operational community to the nature of this seldom-recognized form of error, and they will provide guidance on training techniques and operating procedures to reduce the occurrence of error. The net result will be safer flight operations. Our findings are also being applied in other domains, sich as medicine.

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