



## Affect & Aeronautical Decision-Making

**Objective** Errors in judgment and decision-making are responsible for a large portion of aircraft accidents. Researchers at NASA Ames Research Center and the University of Oregon are collaborating to understand the factors that influence how people make decisions, and to develop ways to decrease the likelihood of decision errors.

**Approach** Novices in any domain, or people dealing with novel situations, frequently try to apply analytical strategies for solving important problems. But when the problems are complex, trying to solve a problem in this manner can prove overwhelming. With experience, people often develop other decision-making strategies by recognizing situations and applying solutions that have worked before. One goal of our work is to develop ways to shorten the time it takes pilots to develop experience that is relevant to the decision-making process.



Emotions can help us make good decisions. Often, the first indication that there is a problem is a “bad feeling in the gut.” Frequently, a good option is recognized because it “feels right.” But feelings can also be misleading. Developing ways to tell when feelings are accurate and how to train their use is a second goal of this project.

**Impact** In aviation, expertise is frequently measured in hours of experience. But much of that experience probably does not contribute to learning. Studies show it may be possible to shorten the time required for pilots and other aviation professionals to develop decision-making expertise by providing them with training exercises. These exercises are designed to provide a “virtual experience” that efficiently mimics the natural experiences they would encounter on the job, and in a much shorter period of time.

Researchers have also demonstrated that when people become anxious, their ability to hold information in working memory is decreased. This effect appears to be limited to feelings of fear and anxiety. The negative effects can be reduced in laboratory tasks by encouraging research participants to become angry or feel challenged, instead of afraid. These findings may be useful in the construction of aircraft emergency procedures and controller instructions for dealing with aircraft in emergency situations. We are also testing interventions that can be used by pilots and others who must operate under anxiety-provoking conditions.

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