Training for Trust in Decision Aids, with applications to the Rotorcraft's Pilot's Associate

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The optimal collaboration between users and decision aids depends on appropriate trust, that is, users must learn to assess and act on uncertainty about the quality of the aid's recommendations in real time. In complex domains, or when the user and aid must face novel situations, this learning task is not likely to be trivial, or to be accomplished over a small number of experiences with the aid. Existing training focuses on making the aid work rather than improving skills for evaluating an aid's performance or teaching strategies for using the aid based on that evaluation. In research sponsored by the Aviation Applied Technology Directorate, U.S. Army Aviation and Missile Command, Fort Eustis, VA (Contract No. DAAH10-98-C-0022), we developed a systematic and general framework for training users of decision aids. We applied and tested the framework by developing a training strategy for a specific decision aiding environment, the Rotorcraft Pilot's Associate.

The basis of the training was a model of a user's trust in a decision aid (see *A Situation Specific Model of Trust in Decision Aids*, in these proceedings). The model helps identify the grounds, temporal scope, granularity, risk, and other parameters of trust judgments that underlie interaction decisions at different phases of decision aid use. The targeted interaction decisions include: selection of automation mode, adjustment of aid parameters, frequency of monitoring, and acceptance, rejection, or modification of the aid's recommendations. The training framework was tested by employing it to design a demonstration training strategy for the Cognitive Decision Aiding System (CDAS) module of the Rotorcraft Pilot's Associate (RPA). The training includes the following components: (1) *How to interact with CDAS*, including the mechanics of interactive options, like moving recommended combat battle positions or adjusting weights in the evaluation process, that are not emphasized in standard training, along with consideration of the time and effort involved in each option. (2) *What you can contribute*, including a review of situation features that CDAS takes into account and other features that CDAS does not take into account, but which may be known by users. (3) *When to Contribute*, including practice scenarios in which different features become relevant and different interactive options become appropriate at different phases of a mission.

The illustrative training package was evaluated by four experienced pilots. In their comments, the pilots emphasized two results of the training: (1) acquiring increased understanding of the Combat Battle Position Planner and (2) learning new ways to interact with it. These findings lay the groundwork for further RPA training development.