

## DTIC Current Awareness: January 2003

Archer, R., Walters, B., Oster, A. & Van Voast, A. (2002). *Improving Soldier Factors in Prediction Models (Report No. ARI-TR-1132)*. Boulder, CO: Micro Analysis and Design. (DTIC No. ADA408867)

<http://handle.dtic.mil/100.2/ADA408867>

**Abstract:** Report developed under SBIR contract for topic A98-163. A key decision made at the highest levels of any military is the trade-off between allocating resources to system acquisition versus allocating resources to maintain force readiness through training. Advanced Distributed Simulations (ADS) provide a mechanism for tactical combat training through man-in-the-loop simulators and Computer Generated Forces (CGF). The potential for using ADS to address the trade-offs for allocating resources is dampened by the unrealistic behavior of CGF. Phase 1 of this project produced algorithms, data structures, and a methodology for incorporating the effects of training and environmental stressors to improve CGF behavioral realism. In Phase 11, we expanded and enhanced the technical feasibility for including these effects in CGF entities on simulated battlefields. The resulting product is called the Training Effects and Stressor Integration Module (TESTIM). It can provide the Army with the ability to improve the realism of CGF entities in ADS and other human performance models. TESTIM can also be used to assess the expected payoff of training in terms of improved performance.

Davis, W. D. & Mero, N. (2002). *Dispositional vs. Situational Goal Orientation: Effects on Self-Efficacy and Performance*. Mississippi University. (DTIC No. ADA409230)

<http://handle.dtic.mil/100.2/ADA409230>

**Abstract:** An experimental study investigated the effects of dispositional goal orientation, task difficulty, and accountability manipulations (outcome, process, none) on situational goal orientation and task performance. Accountability and task complexity was manipulated using a 3 X 2 experimental design. Subjects completed measures of dispositional goal orientation, and initial task self-efficacy. Subjects then were exposed to an accountability manipulation, designed to frame the subjects' situational goal orientation. Subjects then performed a computerized managerial decision-making task. Task performance was captured electronically and tracked across each decision-making trial to determine rates of learning. Task self-efficacy was measured following pre-determined trials of the experiment and following completion of all decision-making trials. As expected subjects in process and outcome accountability conditions reported higher levels of task specific (situational) learning orientation. The outcome accountability

manipulation also resulted in a higher situational performance orientation. Accountability was also found to affect performance, especially when persons are in the early stages of performing a complex task.

Debnath, N., Hailani, Z. A., Jamaludin, S. & Aljunid, S. A. (2001). *An Electronically Guided Walking Stick for the Blind*. International Conference of the IEEE Engineering in Medicine and Biology Society, October 25-28, 2001, held in Istanbul, Turkey. (DTIC No. ADA409264)

<http://handle.dtic.mil/100.2/ADA409264>

**Abstract:** Mobility for the blind is always a great problem. Just like a sighted, blind also needs to travel around inside a closed premises like house, factory, office, school etc. They may also like to go for shopping, visiting friends and other places of their interest Presently available electronic traveling aids like sonic path finder, sonic torch etc. are not suitable for using inside a closed premises such as school, factory, office etc. In this paper an electronically guided walking stick that can be used conveniently inside a closed premises has been discussed.

Mero, N. P., VanScotter, J. R. & Guidice, R. M. (2002). *The Influence of Incentives and Monitoring on the Task and Contextual Performance of Navy Recruiters*. Mississippi University. (DTIC No. ADA409337)

<http://handle.dtic.mil/100.2/ADA409337>

**Abstract:** This research investigated the effects of different contextual variables such as supervisor monitoring behaviors and incentive systems on individual perception of accountability for different performance components as well as the effect of those perceptions on sales performance and individual attitudes about the organization. A field study of 140 sales personnel using survey and archival data investigated the effects of behavioral and outcome monitoring and incentive systems on the perceptions of accountability in terms of what subordinates feel accountable for and the degree or intensity to which they feel accountable for those outcomes. Our overall approach was to assess how differences in management system characteristics (focusing on the operant supervisory behaviors of managers) influenced the individual assessments of sales personnel as to different outcomes for which they were accountable. We then considered how those perceptions of accountability influenced the eventual individual performance outcomes and attitudes. Implications for Navy recruiters are discussed.

Shanteau, J., Fullagar, C. J. & Hemenover, S. (2002). *Selecting and Classifying the Good Sailor Exploring the Non-Cognitive Predictors of Expert Team Performance in Complex Technological Contexts*. Kansas State University: Manhattan Department of Psychology. (DTIC No. ADA409067)

<http://handle.dtic.mil/100.2/ADA409067>

**Abstract:** The research used the C-TEAM computer microworld to investigate non-cognitive factors that are associated with effective team performance in complex technological environments. Sixteen four-person teams were longitudinally tracked over a six-week period whilst they performed an air-traffic control task of varying complexity. Results indicated that personality characteristics, specifically conscientiousness, predict team performance, but that this relationship is moderated by the aggregation method. Contrary to most research and theory, our data indicated that team cohesiveness is an outcome, not a predictor, of team performance. Results also indicated that teams performed better when they developed cohesive, task-specific mental models. The current data is being used to further investigate the competencies and non-cognitive factors that are associated with distributed team performance in digital environments.

Shaw, R. L. (2002). *Helmet-Mounted Display (HMD) Interface Design for Head-Up Display (HUD) Replacement Exploratory Development - NTL, Inc (Report No. AFRL-HE-WP-TR-2002-0168)*. Dayton, OH: NTI Inc. (DTIC No. ADA408669)

<http://handle.dtic.mil/100.2/ADA408669>

**Abstract:** Increasingly, helmet-mounted displays (HMDs) are replacing "head-down" and Read-Up Displays (HUD) in advanced cockpit interface designs. HMDs offer potential advantages by providing pilots with more direct access to critical visual information, while offering greater flexibility of head movements, less weight, and less consumption of cockpit space. Much of the symbology, functionality, and mechanization found in current HMDs can be traced directly to HUDs. But, because HMDs are decoupled from the longitudinal axis of the aircraft, different kinds of information can be presented on HMDs. Thus, questions arise concerning the best manner in which to present the additional information, and its interaction with traditional HUD information. The purposes of this effort were to define the human performance requirements for both HUD and HMD interfaces as utilized in military missions, and to produce a preliminary HMD design for a no-HUD aircraft. To establish the functional specifications for the interface design, a user-centered design approach employing cognitive work analysis was employed.

Tucker, H., Brattin, L. & Reason, W. (2002). *Revised Anthropometric Restrictions for US Navy and Marine Corps Trainer and Fixed Wing Non-ejection Aircraft and US Coast Guard HU-25 (Report No. NAWCADPAX/TR-2002/103)*. Patuxent River, MD: Naval Air Warfare Center Aircraft Division. (DTIC No. ADA408959)

<http://handle.dtic.mil/100.2/ADA408959>

**Abstract:** NAVAIRSYSCOM (PMA-202) tasked NAWCAD Patuxent River, Maryland, (AIR-4.6) to perform a baseline accommodation assessment of existing U.S. Navy (USN) and U.S. Marine Corps (USMC) fixed wing non-ejection aircraft and their respective trainer aircraft and establish anthropometric restriction codes (ARC's) as appropriate. The assessment also determined the estimated percentage of future candidate aviators suitable for flight duty in a particular aircraft with respect to their measured anthropometric characteristics. The percents reported were based on the population data set used to provide seven test cases cited in the Joint Services Specification Guidance 2010-3. The methods used in the assessment were different than procedures historically used to determine USN/USMC aviator suitability and to verify cockpit design with regard to aircrew accommodation. A multi variate statistical approach was employed and served as the basis for determining the safe accommodation envelopes for each platform /crew station. Revised ARC's are presented and the respective percents accommodated are summarized.