

David O. Warner, M.D., Editor

Video as Research Data Conference

National Study Center for Trauma and Emergency Medical Systems at the University of Maryland, School of Medicine, Baltimore Maryland. September 30, 2002.

The Video as Research Data Conference summarized the research in the use of video-recording and analysis as a tool for data gathering for topics related to patient safety and improved outcomes and as a medium for capturing behavioral and other data in multiple domains. Participants included invited researchers from diverse backgrounds, including medical, educational, psychology, human factors, medical information, mechanical and industrial engineering, aviation and space systems, safety research, legal, cognitive engineering, and applied cognitive psychology.

The 1-day conference included 18 presentations in five sessions. Presentation abstracts can be viewed on the Internet (<http://nsc.umaryland.edu>, last accessed March 11, 2003). It is anticipated that a series of papers resulting from the conference will be published in future issues of the journals *Quality in Health Care and Cognition and Technology and Work*. In addition, a session at the National Patient Safety Conference to be held in Washington D.C., March 15-19, 2003, will include some of the conference participants.

Brian MacWhinney, Ph.D., Department of Psychology at Carnegie Mellon, Pittsburgh, Pennsylvania, started the conference by describing Talkbank, (www.talkbank.org/dv, accessed March 11, 2003) as a tool for collaborative commentary and linguistic analyses of video that uses video data to build better video analyses. Lisa Neal, Ph.D., Editor-in-Chief of *eLearn Magazine* (www.eLearnMag.org, accessed March 11, 2003), discussed the use of streaming video to enhance on-line education and showed the value of video in an on-line course to teach teamwork skills to emergency medical teams. Colin Mackenzie, M.D., Professor and Director of the National Study Center for Trauma and Emergency Medical Systems, identified the strengths of video over observation. Video task analysis was powerful when performed at two levels of task urgency in multiple cases to identify problems in and solutions to performance deficiencies.

Session two started with Judith Orasanu, Ph.D., National Aeronautics and Space Administration, AMES, Systems Safety Research Branch, Moffett Field, California, who described safety issues in the cockpit related to fatigue and mission frequency. Stephanie Guerlain, Ph.D., Department of Systems and Information Engineering, University of Virginia, Charlottesville, Virginia, presented a very sophisticated video acquisition and analysis system in use during surgery at the University of Virginia (www.sys.virginia.edu/hci, last accessed March 4, 2003). RATE software and the manual for observing and scoring behaviors, with up to four digital video files, are available to download. Dr. Guerlain's team identified communication failures and significant differences in situational awareness between attending physicians and residents. Susan Fussell, Ph.D., Human-Computer Interaction Department, Carnegie Mellon Institute, Pittsburgh, Pennsylvania, described how team workers use certain types of visual information to coordinate collaboration on physical tasks. Session three included the presentation of research abstracts on video applications by George Blike, M.D., Department of Anesthesiology, Dartmouth-Hitchcock Medical

Center, Lebanon, New Hampshire ("Error Reenactments Disseminated with Streaming Video"); Matt Weinger, M.D., San Diego Center for Patient Safety, University of California, San Diego ("Digital Video Capture and Analysis of Anesthesia in Non Routine Events"); Shawna J. Perry, M.D., Department of Emergency Medicine, Health Science Center, University of Florida, Jacksonville, Florida ("Impact of Teamwork on Task Errors in Rapid Sequence Intubation in the Emergency Department"); and Yasser Sowb, Ph.D., Department of Anesthesia, Stanford University, Palo Alto, California ("Clinician Recognition of Ohmeda Modulus II Plus Anesthesia Machine's Electric Power Mode and Function").

Session four included two lawyers: Susan Gillette, J.D., University of Maryland, Baltimore Department of Legal Affairs, Baltimore, Senior Counsel University of Maryland, and Susan Merewitz, J.D., Senior Attorney, Public Health Division of the Agency for Health Care Research and Quality, Rockville, Maryland. They discussed the medico-legal considerations of confidentiality of video recording in academic settings and the government's perspective of video recording in the medical arena, and they cited the federal protections of the Agency for Healthcare Research and Quality. Peter Hu, M.S., and Jacob Seagull, Ph.D., both researchers in the Human Factors Group in the University of Maryland, Department of Anesthesiology, identified technical solutions (facial blurring, masking sensitive information) to increase privacy in selected video data and the use of video clips to minimize confidentiality issues.

Session five presented the principles of video analysis and methods and included an internationally recognized group of presenters. Yan Xiao Ph.D., Human Factors Engineer, Department of Anesthesiology, University of Maryland, gave a review of the types of video-based research tools used, barriers to video-based research, and possible solutions. Emilie Roth, Ph.D., Roth Cognitive Engineering, Brookline, Massachusetts, described work conducted with investigators at Brigham and Women's Hospital using observation as the tool for discovering operating room team performance issues and recommending quality improvement measures. Penelope Sanderson, Ph.D., Key Center for Human Factors and Applied Cognitive Psychology, University of Queensland, Australia, outlined methods to determine where auditory might be better than visual displays. Video analysis revealed that participants performing a simulated patient monitoring task alongside other tasks could avoid head-turning when auditory displays were available. Sue Bogner, Ph.D., Bethesda, Maryland, author of *Medical Error*, described systems approaches using video for the analysis of provider performance in the context of care system factors in place before an error occurs. Rhona Flin, Ph.D., Department of Psychology at Aberdeen University, Scotland, provided a methodology for assessing the anesthetist's nontechnical skills using critical incident reviews and cognitive task analysis with 29 Scottish anesthetists. The prototype method categorizes skills into task management, teamwork, situational awareness, and decision-making and was decomposed into 15 descriptive skills and behavioral markers. The conference ended with a tour of the R. Adams Cowley Shock Trauma Telecontrol Center in Baltimore, Maryland.

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