J34 Understanding the Impact of Human Factors on Forensic Examinations: Recommendations From the Expert Working Group for Human Factors in Handwriting Examination

Melissa K. Taylor, MA, Gaithersburg, MD 20899; Ted M. Burkes, BS*, FBI Laboratory, Quantico, VA 22135; Emily J. Will, MA*, Raleigh, NC 27658; Reinoud D. Stoel, PhD*, Laan van Ypenburg 6, Den Haag, NETHERLANDS*

Learning Overview: After attending this presentation, attendees will better understand: (1) the general themes of human factors and organizational theory, and (2) the findings and recommendations of the Expert Working Group on Human Factors in Handwriting Examination.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by helping forensic professionals understand the impact of human factors on the handwriting examination process.

Much has been written in recent years about the role of human factors in forensic science. Human factors research examines the interactions between humans and other elements of a system—technology, training, decisions, products, procedures, workspaces, and the overall environment—with the goal of improving both human and system performance. Human factors analysis can be used to advance our understanding of the true nature of errors in complex work settings such as crime laboratories. Research in this area has identified factors that contribute to inefficiencies and quantified the effects of human and organizational factors on the performance of critical tasks. Causes of error include fatigue, workload, cognitive overload, poor interpersonal communications, imperfect information processing, team mistakes, and flawed decision making. Error management requires an understanding of the nature and extent of error so that appropriate changes can be made to the conditions that induce error, actions that prevent or mitigate error can be employed, and personnel can be properly trained to avoid error traps. The forensic science community can benefit from the application of lessons learned from human factors work in aviation and medicine to reduce the consequences and likelihood of human error in the scientific interpretation of evidence. While in most instances the results of human error are harmless and correctable, in circumstances such as forensic analysis where errors may lead to the loss of life or liberty, error prevention is imperative.

The National Institute of Justice and the National Institute of Standards and Technology have partnered to sponsor a series of expert working groups to examine the effects of human factors in forensic analyses and recommend approaches to improve practices and reduce the likelihood of errors. This presentation will focus on human factor issues in the handwriting examination process; interpretation and evaluation of handwriting evidence; reporting and testimony; quality assurance and quality control; education, training, and certification; and management. The Expert Working Group on Human Factors in Handwriting Examinations met eight times over the course of two-and-one-half years and heard presentations from experts in the areas of human factors; the weight of evidence in law, statistics, and forensic science; decision making and formulation of propositions; probabilities and likelihood ratios; and other relevant topics. With illustrative examples, this discussion will provide general themes of human factors research, a description of the current handwriting examination process, and present the recommendations of the Working Group.

Handwriting Examination, Human Factors, Managing Error