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Personnel Selection in the Pattern Evidence Domain of Forensic Science: Proceedings of a Workshop

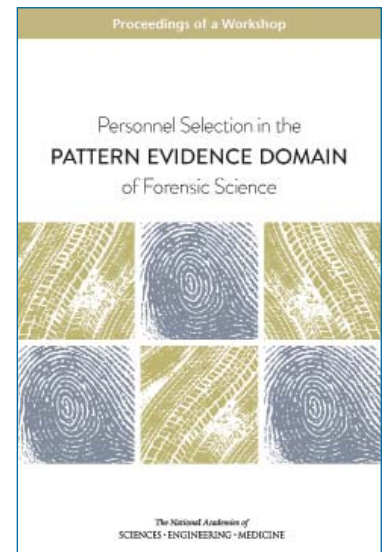
Significant national efforts have been underway to develop standards and guidelines for forensic techniques and to advance research that tests the accuracy and reproducibility of forensic examinations. In the midst of these improvements, the allocation and maintenance of organizational, technological, and human resources will continue to play a critical role in the overall performance of forensics laboratories. Today, and in the foreseeable future, the quality and reliability of forensic analyses depend in large part on the expertise and capabilities of forensic examiners.

On July 14-15, 2016, the Board of Human-Systems Integration (BOHSI) of the National Academies of Sciences, Engineering, and Medicine sponsored a workshop on personnel selection in forensic science that brought together scholars in industrial and organizational (I-O) psychology, practicing forensic scientists and forensic lab directors, and legal experts. The workshop focused on the selection and training of forensic scientists who analyze pattern and impression evidence. Such evidence includes patterns produced when an entity comes into contact with a surface or other objects (e.g., fingerprints, shoeprints, toolmarks, or tire treads), as well as the complex traces and patterns produced by handwriting.

Workshop participants reviewed the current status of selection and training of forensic scientists who specialize in pattern evidence and the development of fair, valid, and reliable selection tools. In doing so, they shared a number of current challenges in hiring forensic examiners and identified some future possibilities for improving selection practices. The workshop's presentations and discussions are captured in *Personnel Selection in the Pattern Evidence Domain of Forensic Science: Proceedings of a Workshop* (2017). This document features highlights from that workshop.

CHALLENGES IN HIRING PATTERN EVIDENCE EXAMINERS

- Maria Weir Ruggiero of the Los Angeles County Sheriff's Department reported that hiring of examiners is often managed by personnel and recruitment units that are isolated and separate from the forensic labs and practicing forensic scientists. In addition, according to Wendy Becker of Shippensburg University, the hiring process can be subject to uneven budget cycles and long waits.



- Jay Siegel of Michigan State University (emeritus) pointed out that evidence submitted to laboratories is rarely in perfect condition and requires special expertise to examine. Jessica LeCroy of the Defense Forensic Science Center explained that analysis of pattern evidence involves defining areas suitable for comparison and comparing samples to known source(s). This task necessitates experts who possess specific visual and cognitive skills.
- Melissa Gische of the Federal Bureau of Investigation agreed with Ruggiero and LeCroy that there are long on-the-job training periods (about 2 years) before performance can be adequately assessed. She noted that on-the-job training is more successful if new hires enter with a foundation of skills and cognitive abilities, notably possessing visual acuity to see different patterns and detect slight differences in images.

CONSIDERATION OF RESEARCH AND TOOLS

- Research presented at the workshop showed reliable individual differences on tasks of visual attention, and other research is making strides toward understanding how training and pretraining experiences develop expert levels of visual attention.
- Forensic laboratories are looking for measures and mechanisms to detect both necessary skills and cognitive abilities among applicants. According to LeCroy, the forensic science community needs help validating the importance of visual acuity and related cognitive abilities to the job, determining whether existing tests are reliable at measuring these skills, and determining the extent to which training can develop necessary skills and abilities.

FUTURE POSSIBILITIES

- S. Morton McPhail, president of the Society for Industrial and Organizational Psychology, pointed out that there is a thorough process for developing fair and appropriate selection tests that has been developed and refined in the field of I-O psychology for over a century. It has been applied to many contexts across multiple professions and can be useful to the field of forensic science.
- Dan Putka of Human Resources Research Organization acknowledged that the benefits of validated selection practices and assessments can include improved job performance, reduced turnover, increased job satisfaction, reduced training costs, and enhanced legal defensibility.
- Andrew Imada of A.S. Imada & Associates and Ann Marie Ryan of Michigan State University noted that some tests, like the form blindness test, show promise in reliably predicting an individual's performance on visual tasks. They said that a formal validation study to develop selection tests for forensic laboratories could capitalize on existing knowledge, methods, and tests. Given the size and resources of laboratories and the nature of the profession in the pattern evidence domain, a validation study could reasonably be conducted through a consortium or coalition of labs.

For More Information . . . This Workshop Highlights was prepared by the Board on Human-Systems Integration (BOHSI) based on the workshop proceedings *Personnel Selection in the Pattern Evidence Domain of Forensic Science: Proceedings of a Workshop* (2017). The workshop was sponsored by the National Institute of Standards and Technology, U.S. Department of Commerce. Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the authors and do not necessarily reflect the views of any organization or agency that provided support for the project. Copies of the report are available from the National Academies Press, (800) 624-6242; <http://www.nap.edu> or via the BOHSI page at <http://nas.edu/pattern-evidence-personnel>.

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