



## Criminalistics Section - 2016

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### **B22 Think Outside the Box: External Human Factors on the Analysis, Comparison, Evaluation-Verification (ACE-V) Methodology**

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After attending this presentation, attendees will gain a different perspective on the topic of cognitive bias within forensic sciences, namely fingerprint examinations. The goal of this presentation is to suggest some external variables which have not been researched to date and which can contribute to the increase or decrease of latent print examiners' performance during their workflow.

This presentation will impact the forensic science community by providing a different way to observe cognitive contaminations by focusing on external variables such as feedback, accreditation, opportunities for funding, and external pressures from other professionals. In this way, this study looks for the responsibility of other professional roles within the legal system (managers, external consultants, lawyers, and judges) in regard to the topic of miscarriages of justice.

In 2004, in the Madrid bombing case, Federal Bureau of Investigation (FBI) latent print examiners identified Brandon Mayfield as the contributor of a fingerprint associated with the terrorist attack due to a misguided decision within the fingerprint analysis. Research conducted on human factors since that event showed that one possible explanation for the error made by the latent print experts was contextual bias; however, this was not specific to only this case within a forensics laboratory in the United States nor even specific to a particular forensic discipline.

In recent years, the forensic community has found, in a diversity of cases, various flaws in their procedures which have led to miscarriages of justice within the legal system and have required laboratories to reanalyze cases where errors may have occurred.

Due to these incidents, the academic community has contributed research providing governmental institutions with empirical data on human factors and contributing to official reports regarding quality procedures to circumvent issues such as cognitive contaminations.

It has been noted that forensic laboratories around the world have now started to embrace quality and accreditation standards. There is an increased need to seek high levels of quality within the procedures that practitioners undertake in the various disciplines of forensic science during their everyday work flow.

Although there is already research on human factors, this presentation suggests that the majority of the observed variables are associated with what might be called "internal variables," since these are concerned with factors regarding personal characteristics of the latent print examiners (e.g., fatigue, stress, stereotypes, and cognitive contaminations in general).

Thus this study was interested in discussing the plausibility of looking for "external variables" such as feedback from managers, accreditation agencies, and external consultants which can lead to overconfidence, opportunities for funding which enables the laboratory to improve its methodology, equipment, and human resources, and also external pressures from investigators and other departments of investigation, lawyers, or even judges which can lead to contextual bias. These external pressures are believed to be the source of increasing or decreasing motivation within examiners' work flows which affects their performance.

By investigating the impact these variables have on forensic practitioners' performances, other roles of the legal system will be included in this discussion as well as how to achieve a more holistic understanding of the causes of error and how to manage these risks to avoid future miscarriages of justice.

With strong collaborations between different institutions (e.g., forensic laboratories, departments of investigations, courts, and accreditation agencies), it is possible to improve quality assurance and quality control for forensic procedures, thus improving the legal system overall.

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#### **Fingerprints, Errors, Standards**