



B166 The Implications of Latent Print Quality, Black Box, and White Box Studies

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The goal of this presentation is to help attendees understand the implications of this series of studies on the latent print examination discipline.

This presentation will impact the forensic science community by describing a portfolio of research that was conducted to evaluate the latent print examination process.

In response to a fingerprint misidentification in the 2004 Madrid bombing case, a proactive, internal Federal Bureau of Investigation (FBI) Laboratory review committee evaluated the scientific basis of friction ridge examination and recommended a portfolio of research.¹ To address those recommendations, since 2007 the FBI Laboratory and Noblis® have engaged in a research program evaluating the latent print examination process, which has resulted in eight journal publications to date.²⁻⁹ This portfolio of work has provided a systematic series of analyses of key aspects of the latent print examination process.

The Latent Quality Study involved: (1) conducting a detailed survey of how quality and clarity are assessed within the latent fingerprint community; (2) developing guidelines and metrics for describing the clarity of friction ridge impressions; and, (3) developing software tools to provide objective, reproducible methods for assessment of friction ridge impression clarity.

The Black Box Study was a large-scale study of the accuracy and reproducibility of latent print examiners' determinations. The follow-on Black Box Repeatability Study retested examiners to evaluate the repeatability of their determinations.

The Sufficiency for Value Study evaluated how image clarity and feature content are associated with the assessment of latent value by latent print examiners.

The White Box Study investigated the relationship between examiners' annotations and their determinations. This included: (1) analyses of how examiners assess the sufficiency of information for individualizations; (2) analyses of how examiners revise their analysis of a latent after comparison with an exemplar; (3) analyses of inter-examiner variation of minutia markup; and, (4) analyses of the factors associated with exclusion decisions.

These studies have been critically important with respect to fingerprint examiner testimony in the legal system and are frequently introduced in court in admissibility hearings; in response to these results, some agencies have changed their policies on how examiners testify in court. These studies have also had an impact on laboratory standard operating procedures, examiner training, certification and competency testing, and quality assurance.

This presentation will provide summaries and a synthesis of these studies to date and will discuss their implications and recommendations on how the results of these studies and their implications may be used to enhance the field of latent print examination.

This research has a variety of implications or recommendations on latent print business processes, including not only error rates, but consensus rates, standardized markup for detailed casework documentation, verification (and blind verification), proficiency testing, conflict resolution, and the effects of human factors.



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Latent Prints, Error Rates, Examiner Accuracy