J3 Measuring and Communicating Opinion Strength in Forensic Handwriting Examination: Concepts, Findings, and Future Directions

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Learning Overview: After attending this presentation, attendees will better understand reliability and validity in the context of developing opinion strength measures. Various opinion strength scales currently used by forensic handwriting examiners will be discussed, and findings from studies addressing opinion measures from research conducted by this study will be presented.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by teaching important components of the processes of empirically establishing the reliability and validity of measures of opinion strength and opinion language founded on the education, training, and experience of experts in the field.

The evaluation of the authenticity of writing is based on the premise that handwriting is a behavioral artifact that is distinctive because of features and characteristics within various forms of writing (e.g., signatures, hand printing, numerals). Both internal (endogenous) and external (exogenous) factors influence the appearance of writing. For example, a significant body of research demonstrates that a person's writing habit is the expression of endogenous physiological and neurological characteristics of the writer. Other research has demonstrated that exogenous factors such as the amount of space available for the writing or the angle of the writing surface result in different expressions of the writer's characteristic writing habits. These factors lead to the two primary tenets of handwriting examination: first, that no two people write exactly alike in all features and characteristics when considered cumulatively and in combination (*inter*-writer variation); and second, that no person writes exactly the same way twice (*intra*-writer variation).

A substantial portion of Forensic Document Examiner (FDE) training is devoted to the comparison of signatures, handwriting, and hand printing. During training, examiners learn methods of handwriting disguise and simulation, how to evaluate similarities and differences of writing, characteristics of distortions due to old age, illness, time pressure, and other methods of determining the quantity and quality of writing features observed during an examination. Examiners are trained to look for substantial similarities and differences among writing samples. They are also trained to look for repeated small characteristics that may be enough to establish clearly that writings are the work of different people, even though they may contain many general similarities. If two writings are by a single person, then no fundamental differences should exist.[1] A few fundamental, repeated differences may carry substantial weight in the examination outcome. During writing comparisons, examiners assign these similarities and differences some degree of evidentiary weight, which then forms the basis for the strength of the examiner's opinion.

This presentation addresses the findings of three studies investigating the reliability, validity, and measurement properties of measures of opinion strength currently used by handwriting experts in the United States and abroad. All studies used a multi-method approach in which professional handwriting examiners completed a series of comparisons of questioned and known handwritten signatures. In Study 1 and Study 2, they were then asked to give an opinion about whether they felt the questioned signatures were genuine or simulated in some way. After giving their opinions, examiners then gave their opinion strength using the nine-level American Society for Testing and Materials (ASTM) opinion measure. In Study 3, examiners viewed ten writing comparisons, including both signatures and extended writings. They were asked either to opine on whether the questioned writings were genuine or simulated or whether the two sets of writings were produced by the same writer or different writers. Then examiners were asked to give their opinion strength on each of seven different opinion measures currently in use in the United States and abroad. In Study 2 and Study 3, examiners were also asked to indicate their opinion strength on a sliding scale from 0 to 20 (Study 2) or 0 to 100 (Study 3).

Differences were observed in expressed opinion strength depending on whether the examiners felt that the signatures were genuine/written by the same person or simulated/written by different people. Another observation noted was that the boundaries between levels of opinion strength overlap, and that the range of opinion strengths varied according to the number of levels on the scale (3, 5, 7, 9). Examiners in Study 3 expressed that they were unclear in some instances as to how to apply opinion strength measure language to their decisions, suggesting that more research is needed to determine how the scale levels are understood both by examiners and by consumers of the examiner's opinions.

Reference(s):

1. Lindblom, B.S. (2006). A forensic document examiner's training. In J.S. Kelly and B.S. Lindblom (Eds.), *Scientific Examination of Questioned Documents (2ed.).* (Ch. 3, pp. 15-17).

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