J17 The Dynamics of Guided-Hand Signatures

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After attending this presentation, attendees will better appreciate the characteristics of guided-hand signatures and how they differ from the genuine signatures of both the writer and the guider.

This presentation will impact the forensic science community, in particular the Forensic Document Examiners (FDE) community, by providing empirical research in guided-hand signatures, a topic previously covered by more anecdotal research.

In 2008, research designed to study the dynamics of guided-hand signatures was presented at the 66th Annual Conference of the American Society of Questioned Document Examers.[1] Up until that time, little scientific data had been recorded to underpin the claims that guided-hand signatures exhibit certain characteristics as documented in historical literature. Additionally, according to this research, there has not been any considerable research into guided-hand signatures since that time.

Traditionally, the term "guided-hand" referred to those signatures that were executed by an individual with their hand literally guided across the page by another individual. Most commonly this occurred when the writer was frail or in ill health and needed a great deal of assistance with the motor control aspect of executing their signature. The terms "assisted" and "guided" can be a matter of debate because the difference may not be visibly apparent in static images of the completed signatures. Further, there may be portions of the signature that have to be "guided" and others "assisted" during the execution. In effect, the term "guided" has come to infer a deceitful motive. This paper will not debate motives, but rather discuss if it can be determined from dynamic data of the handwriting activity, if a signature can be predicted or determined to have been produced by a writer whose hand was guided.

Prior research focused on observations of the static image of the ink line once the hand had been guided to perform a signature, and then the comparison of this ink line to specimens of both the writer and the guider. This study was conducted to determine if the effects of the guider and the writer could be observed and isolated using dynamic data captured with a digitizing tablet. This data is defined as the spatio-temporal characteristics of the handwriting activity, such as speed, acceleration, deceleration and the amount of time the pen is on and off the paper.

The test protocol defined in the initial 2008 research was adopted. Twenty individuals were tested in both the writer and the guider capacity. These individuals were chosen to include writers of both left and right handedness, writers of various skill including aged and frail writers, and both male and female writers. Each writer was asked to also be the guider during the data collection. The writers were paired to ensure maximal distribution of variables, such that left-handed writers were paired with writers of the same and different handedness, and frail writers were paired with both strong and other frail writers, for example.

Using the same signature capture protocol from the 2008 study, each writer executed six genuine signatures for comparison purposes. Each writer also executed six simulated signatures of a paired-writer. Writers were asked to consciously sign their name while another writer acting as a guider simultaneously attempted to execute the same name. Writers were also asked to hold a pen in a limp hand while the guider attempted to 'sign' their name. This scenario was conducted sequentially so there was some familiarity with the pictorial appearance of the signatures for the writers acting as guiders.

The resultant data was then compiled to demonstrate that the dynamic data from the guided-hand signatures revealed a particular trend that distinguished them from naturally executed writings and from the freehand simulations. The results could not support a predictor model from the dynamic data.

Reference(s):

1. Ibrahim, S. (2008, August). The Dynamics of Guided-Hand Signatures. Paper or poster session presented at the meeting of 66th Annual Conference of the American Society of Questioned Document Examiners. Asheville, NC.

Forensic Document Examination, Guided-Hand, Signature