

Handwriting Analysis Written on Paper Using Different Surfaces

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Abstract- *Handwriting is important evidence in suicide and other cases. A forensic examiner faces different challenges while examining handwriting. In suicide cases, suicide is found on different surfaces or written on paper on different surfaces, mostly using a table or smooth surface. In the present study, handwriting has been analyzed on three different surfaces. The three surfaces are hard surface (a standard sample), smooth surface, and lap. Handwriting samples from 300 individuals were collected on both hard and soft surfaces, along with their individual standard handwriting samples, which were written on hard surfaces. Individual and class characteristics were examined. One should be able to distinguish between these differences and attempts to deviate from typical characteristics for concealment as a forensic document examiner. The proper approach to such examinations is to examine general or class characteristics first, such as speed, skill, movement, pen pressure, and so on, before moving on to individual characteristics and stylistic features. Based on some surface or condition-specific characteristics, the examiner can also speculate about the possible condition under which the writer wrote the content.*

Indexed Terms- *handwriting analysis; characteristics; surfaces*

I. INTRODUCTION

Basically, handwriting means writing done by using any writing instrument like a pen and pencil. Every person has their own individual handwriting. Handwriting is visible speech that is not spoken but is written with the help of a pen, etc. Principles of handwriting: 1) Every person has individual and unique handwriting. Individuals have a unique handwriting pattern or style. 2) No two people can have the same handwriting; even twins cannot have the same handwriting. 3) Natural variation is part of

the handwriting process and serves to make handwriting unique. 4) An individual's handwriting changes over the course of his or her life.

Handwriting characteristics are classified into two main types: 1) class characteristics and 2) individual characteristics.

Handwriting samples were collected from 300 people on both hard and soft surfaces, as well as their individual standard handwriting samples, which were written on hard surfaces. Individual and group characteristics were investigated. Handwriting analysis can be done on a variety of surfaces, including hard, soft, and on the lap. The method examines various writing movements, such as finger hand, forearm, and whole arm movements, and how they interact to influence the characteristics of an individual's handwriting. Line quality, alignment, size, spacing, connecting strokes, pen lifts, pen pressure, and slant are examples of these characteristics.

II. METHODOLOGY

Sample collection analysis-

Handwriting samples were collected from 300 people. The samples are collected on three different surfaces: the first is a hard surface, the second is a soft surface, and the third is a lap. With a sample of their standard handwriting. The handwriting sample was collected from a young adult (aged 18 to 21) BSc student from one of Satara's colleges.

Hard Surface handwriting analysis-

Handwriting Analysis is the process of analyzing handwriting samples written on a firm surface, such as a desk or table. The handwriting expert will typically use a magnifying glass or microscope to examine the details of the writing, such as the pressure applied, the stroke direction, and the spacing between letters and words, to conduct this type of analysis.

Soft Surface Handwriting Analysis:

Soft surface handwriting analysis involves analyzing handwriting samples written on a soft surface. To conduct this type of analysis, the expert will typically examine the pressure applied to the writing surface, the size and shape of the letters, the slant of the writing, and the overall style of the handwriting.

Lap Handwriting Analysis-

Lap handwriting analysis is the process of analyzing handwriting samples while the writer is sitting on their lap with the writing surface on their lap. The expert will typically examine the pressure applied to the writing surface, the size and shape of the letters, the slant of the writing, and the overall style of the handwriting to conduct this type of analysis.

The collected samples were then analyzed using handwriting principles, a transparent stencil, a magnifying lens, and handwriting characters such as alignment, pen pressure, spacing, speed, slant, and so on.

Each writer's writings on the normal writing surface (hard surface) were taken as their standard writings. First, the samples were examined based on the writer's class characteristics. The variation in class characteristics was observed in comparison to the class characteristics of each individual writer's standard handwriting. The following class characteristics were considered:

Pen pause: absent, present.

Slant: Vertical, Forward and Backward

Speed: Slow, Fast, and Normal.

Spacing: small, large, medium

Skill: Low, Medium and High.

Alignment: Ascending, Descending, baseline.

Line quality: Defective, Poor and Good.

Pen pressure: Light, Medium and Heavy



III. RESULT

The goal of this study is to examine handwriting. In this study, handwriting samples from 300 people were examined in terms of their general and individual characteristics on three different writing surfaces to see if the examiner could identify the writer based on characteristics that did not change depending on the writing surface. Slant, alignment, pen pressure, skill, pen pause, speed, spacing, speed, and line quality are not necessarily affected by different writing surfaces. The current study demonstrates that individual features that can be used for identification and opinion remain unaffected.

IV. OBSERVATION TABLE

Characteristic	Standard sample	Question sample(3 surface)		
		Hard surface	Soft surface	Lap surface
Spacing	Large	Large	Large	Large
Slant	Vertical, backward	Vertical, backward	Vertical, backward	Vertical, backward
Speed	Normal	Normal	Normal	Normal
Skill	Medium	Medium	Medium	Medium
Line quality	Good	Good	Good	Good
Alignment	Baseline	Baseline	Baseline	Baseline
Pen pressure	Medium	Medium	Medium	Medium
Pen pause	Absent	Absent	Absent	Absent

V. DISCUSSION AND CONCLUSION

The study examined the handwriting of 300 individuals on three different surfaces: hard surface, soft surface, and lap, in order to identify the handwriting of the same person. After examining the handwriting samples of writers on various writing surfaces, it can be concluded that authorship can be determined if the examiner follows the basic principles of handwriting identification. General characteristics did not change significantly across writing conditions; for example, alignment changes only when a lap surface is present, but alignment does not change on hard or soft surfaces. Throughout the study, it was discovered that class and, more importantly, individual characteristics play an important role in determining authorship, as individual characteristics are very resistant to changes in writing surfaces.

These surfaces' irregularity and softness cannot withstand the pressure exerted by the writing instrument. Changes in size, slant, and spacing, according to the study, are not surface-dependent, i.e., these characteristics do show some changes, but these changes are not significant enough to identify the writer. Despite the fact that every writer has natural variations, these variations will be similar in standard writing conditions and on different writing surfaces.

ACKNOWLEDGEMENT

The study supported by the Shivani patole assistant professor in department of forensic science, Dr. B. T. Jadhav principle of yashvantrao chavan intitute of science, Vikram Hankare Incharge department of forensic science.

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