

Research Article

Volume - 8 Issue - 1 February 2018
DOI: 10.19080/JFSCI.2018.08.555726

J Forensic Sci & Criminal Inves

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A Correlative Study of Individualization from Hieroglyphics Documents among Siblings



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Submission: February 21, 2018; Published: February 26, 2018

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Abstract

Questioned documents which consists handwritten documents, computerized printout, and symbol or sign used for communication among groups, has aroused and increasing with the passage of time. Yet, we are facilitated with advance technologies but still a few of the aspects are untouched. During the analysis of documents examination, we rely on the class and individual characteristics. It is considered that human is not a machine who can work similar, hence, a variation is encountered which is known as the natural variation. Every individual has their own individual characteristics, formation of letters, style of writing which may be adopted from the handwriting of someone else or might be adopted during the phase of maturation. This study was carried out to determine any similarity between the handwriting among siblings, because, it is considered that both might have learnt or adopted the same characteristics from same school, parents or from any group. During this study, it was observed that t-value between the handwriting characteristics of siblings was -1.4236 and the p-value was 0.0925 at (0.0925 < 0.10). It shows that the handwriting of siblings is influenced from each other, teacher or parents and bear an elevated level of significance.

Keywords: Handwritten documents; Individuality; Characteristics; Siblings

Introduction

Handwriting is considered the reflection of a person's state of mind may reveal a lot his personality and mind. According to Huber, handwriting as a complex motor skill which is a combination of sensory, neurological and physiological impulses. Every person has a unique style of writing which usually remains similar throughout life time but addition of more individual characteristics continues. Individual characteristics are responsible factors which help to identify the writer or determine the similarity or distinguish between two different handwriting samples. Handwriting examination is based on the facts that no two persons can write exactly similar although some variations are always a part of their handwriting [1,2].

These variations are used to establish individuality among the unknown authors although some individual characteristics are believed to get inherited from one generation to another generation among the close genotype family members. The inherited traits within a family are taught or to write under similar circumstances by same parents and teachers. Moreover, if the both siblings fall under the similar age group then they also learn to write by imitating each other's writing habits which may be influenced by any particular writing style. Therefore, during the development of maturation of handwriting in early phase

of life; similar characteristics are observed in most of the cases [3,4].

The handwritten documents vary in individual characteristics matrix system and overall appearance that may be because of temperature, disease, age, health etc. Therefore, the individualization from handwritten documents among siblings and family members has a question against interpersonal and interpretational variation. Earlier in the 20th century, a few of the scientists comes out with study over twins, siblings and their correlation. In 1928, Kramer and his colleagues conducted a study on the handwriting resemblance between twins and siblings and come out with a significance result. According to that study, a greater degree of resemblance was observed in handwriting. Later in 1987, Munch reported the similarity between the handwriting of mother and daughter in form of a study.

In the same manner, Kiran P, Monica S conducted assorted studies on the determination of inheritance pattern and inherited traits between the family members. Following her earlier studies, Monica S conducted a study to find out the impact of heredity and environment in handwriting by using the computational features on MATLAB. As the resultant of that study, it was

revealed that genetics has a role in shaping the writing habits of writer and handwriting is mixture of both nature and nurture. This study was carried out to determine any similarity among the individual characteristics in the handwriting of siblings and any significant correlation between their inherited traits of handwriting. For this study, the individual characteristics of handwriting such as formation of letters, initial stroke, connecting stroke, rhythm, pen lifting and tremors were studied. Because of this study, it was observed that the handwriting of the siblings resembles with each other due to similarity found in the individual characteristics. Though, the overall appearance of the handwriting might or might not be similar but when carefully examined the formation pattern of the letters is found to be similar in the handwriting samples of siblings [5,6].

Methodology

Handwritten documents consist characteristics of an individual style of writing adopted from the family members, teacher or may be adopted during the phase of maturation of development. As per the earlier discussion, this type of documents is encountered in fraudulent cases and the analysis of such documents leads towards the individualization of suspect. This study was carried out to determine and to establish any relation between the writings among siblings [7,8].

Material and Method

For this present study, a total of 50 samples were collected from 25 families which including male and female siblings from each family. All the samples were collected on A4 size sheet with the help of blue ball point pen. To take the samples, a standard letter was given to the subjects and was asked to copy of it. All samples were collected in the month of March- April 2017, when the temperature was in between 18^o-35^o C. Simple random sampling method was used during the collection of samples. All the subjects were informed about the purpose of the study and prior consent of the subject was taken. All the collected samples were preserved in a white A4 size envelope and were placed at room temperature for further analysis process [9,10]. All the samples were manually examined by using stereoscope and hand lens of 10 X. All the inherited traits were examined based on the individual characteristics. For the photography of

samples, a Vivo V-3 phone model with 13 mega-pixel camera quality was used. A hypothesis was set up for the analysis in this study to conclude the individuality of an individual based on hieroglyphics material [9-10]. The inherited traits might be similar among the siblings. Therefore, Hypothesis; H₀; - siblings have similarity among the handwriting. H₁; there is no correlation between the handwriting of siblings. Hence, H₀ is not rejected in favor of H₁ which represent that siblings have similarity in their handwriting.

Result & Discussion

This study was carried out to determine individuality in the handwriting characteristics among siblings (brother and sister) based on the individual characteristics. It is considered that siblings who study in same school, taught by same teacher and parents inherit some of the writing characteristics from them. Although during the phase of development, these features change and an individual adopt his/her own characteristics. Since, the siblings follow same trend though have possibilities of possession same writing skills and characteristics. In this study, some of individual characteristics i.e. formation of letters, initial strokes, connecting strokes, rhythm, pen lifting and tremors were examined in a few selected alphabets. These alphabets (A, O, M F, G, and Y) were selected from the written material by an individual that included; starting of words, middle letters and ending letter of any word.

Through the analysis process of handwritten material, it was observed that formation of letters was highly similar between the writings of siblings. It might be an effect of same educational system, influence of parent’s handwriting etc. The observed similarities in the formation of letters and connecting strokes are given below in (Table 1). In the above table, the similarities between the writings of siblings were discussed. In which, the formation of letters, connecting strokes, line quality and other class characteristics were examined carefully that were highly influenced from the handwriting of each other. While in (Table 2) the individual characteristics of handwriting were examined. The observation of handwriting features i.e. formation, initial strokes, connecting strokes; rhythm, pen lifting and tremors were examined for both siblings (brother & sister) [9,10].

Table 1: Observation table of letters similarities between siblings.

S. No.	Letters	Similarities in between letters of samples	Observation of samples	Percentage of similarities
1.	Of	Connecting strokes of o, formation of letter f.	21	84.00%
3.	Who	Connecting stroke of h and o, formation of letter w	20	80.00%
4.	And	Formation of letter n, connecting strokes of a and n.	24	96.00%
7.	Loaded	Formation of letter l.	21	84.00%
9.	Am	Formation of letter a and m.	24	96.00%
10.	Sending	Connecting stroke of e and n.	25	100.00%
11.	To	Formation of letter t and o.	22	88.00%
12.	That	formation of letter t, pen lift on letter t.	21	84.00%
13.	As	Formation of letter a.	21	84.00%

Table 2: Similarities between Siblings handwriting characteristics.

Sample no.	Characteristics of hieroglyphics / No. of cases for individuality	A (Brother)	B (Sister)	Alphabets
Total no. of samples = 25	Formation	19	21	A
	Initial stroke	12	20	O
	Connecting strokes	21	22	L
	Rhythm	23	24	S
	Pen lifting	20	22	M
	Tremors	14	17	F

As a resultant of the study, it was found that the individual characteristics were highly discriminating but influenced from each other. The details are given below in the (Table 2). To determine any correlation between the handwriting of siblings, the correlation coefficient was examined. The correlation coefficient was obtained positive with the value of R-value 0.8328 and R²- value was 0.6936. The values are given below in (Table 3). This is positive correlation, which means that the characteristics of brother’s handwriting have high positive values with his sister’s handwriting characteristics. To determine the level of significance in among the handwriting of brother and sister, one tailed t-test was applied. The significance level was examined at values p< 0.10 which is given below in (Table 4).

Table 3: Correlation coefficient in siblings handwriting.

Correlation coefficient	R- Value	R ² -value
Obtained values	0.8328	0.6936

Table 4: Significance level between the handwriting of siblings.

Significance level	T-Value	p-Value	Result
Obtained Values	-1.4236	0.0925	P<0.10

From the above test of significance, it was observed that t-value between the characteristics was -1.4236 and the p-value was 0.0925. The obtained values of handwriting characteristics (0.0925 <0.10) is less than the significance level which satisfied the correlation between brother and sister. As per our earlier study, we observed that the writing of an individual shows the reflectance of their inherited traits of writing from parents while in this study, the siblings writing reflect the characteristics of similarity at very high level. This study can be helpful for the questioned documents examination especially in those cases where the specimen or admitted writings couldn’t be available. This study can be helpful to provide the clue and minimize the number of suspects involved in case. As an advance

implementation of rhythmic system in handwriting examination has proved its significance, therefore, it can also improve its significance in the handwriting of the siblings and can put on par of other existing analysis procedures.

Conclusion

Handwriting of the siblings within a family resembles the influence of their parents writing, hence, it can be assumed that the handwriting of the siblings will also resemble from each other. It might be possible and a cause of that both had learnt the pre-writing skills under similar circumstances and might have imitated each other’s handwriting. Due to this their writing style, it is quite possible that the writing characteristics may be found similar with each other. As the resultant of this study, it has been proved that sibling’s handwriting is influenced from the writing of each other at an elevated level. It can be a milestone in the field of forensic investigation to prove the authenticity of handwritten documents in fraudulent cases. If any kind of suspected document is recovered and the admitted or the specimen is not available in that case, the documents recovered from the family or siblings can be put up for the analysis of handwritten questioned documents.

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DOI: [10.19080/JFSCI.2018.08.555726](https://doi.org/10.19080/JFSCI.2018.08.555726)

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