

## Importance of Graphological Studies in Forensic Science: A Review

Kratika Mishra<sup>1</sup>

Available online at: [www.xournals.com](http://www.xournals.com)

Received 19<sup>th</sup> January 2018 | Revised 10<sup>th</sup> February 2018 | Accepted 25<sup>th</sup> March 2018

### Abstract:

*Graphology is a scientific method of identification, evaluation and understanding the personality of an individual. Personality mainly comprises the characteristic patterns of thoughts, feelings and behavior which imparts uniqueness to a person. Graphology is not only concerned with the written symbol itself, but also with the symbol's expressive value i.e. it does not depend on the matter in what context the symbol is used or whether it is neat or untidy but rather it focuses on what the symbol suggests about the writer. Graphology is found to be useful for the retrieval of information related to the health issues, morality and past experiences to hidden talents, and mental problems. This present study deals with the reliability and validity of this method in the field of forensic science for the sake of dealing with criminal mind.*

**Key Words:** Graphology, Forensic Science, Handwriting, reliability, validity. Criminal mind

### Authors:

1. Bundelkhand University, INDIA

## Introduction

Graphology or the handwriting analysis is the field of identifying and understanding the behaviour, personality and characteristics of an individual by analysing the handwriting of a person. As we all know that handwriting analysis is a complex and a very time consuming process. The graphology as a science is not new to the world it is being in used from the past 400 years. Camillo Baldi is considered as the father of graphology by giving the systematic observation of handwriting in the year 1622. The term “graphology” was coined by Abb Jean-Hippolyte Michon in Paris in 1897 by the combination of two Greek words ‘graphein’ which means ‘to write’ and logos which means ‘science’ (Deshpande, 2016).

Handwriting is such a unique feature of an individual, it doesn't matter that the person with the use of hand, foot or mouth the handwriting will same as well as the unique one. Handwriting is not handwriting it is basically the brain writing as with the response from the brain the person is able to write. A unique pattern is produced by the brain which is as similar with every individual that reveal the personality trait. Handwriting alone can be able to reveal various elements of an individual behaviour or its personality. It is also able to give the brief knowledge about person's intellect, his emotions, fears, aptitude level, skill, their motivation and integrity. (Kedar et al, 2015).

The graphological studies relate with two basic approaches i.e. graphical analysis of the structural type of writing and analysis of the type of symbol or letter. The forgery in any other person's handwriting can be analysed and identified by proper examination of the characteristics like pen pressure, spacing, formation of letters etc. (Dang and Kumar, 2014).

Graphology and handwriting analysis can be classified as the subset of the study of psychology. Graphology is useful in understanding personality traits through the strokes and patterns revealed by individual's handwriting which itself signifies the traits such as emotional and mental instability. Hence these traits are important to be known and can be helpful in dealing with the cases of profiling of any serial killer or any criminal and suspect so as to narrow down the search of an investigation.

The goal of graphology is simply to determine the personality characteristics of a person with the help

of the handwriting which reveals the expressive behaviour and its individual style of response (McNeal, 1967).

The graphological studies plays a very important role in the forensic science for dealing with the cases related with psychiatric activity of any criminal or the cases related with any suicide notes, anonymous letter etc. Graphology in forensic is the study of handwriting especially that found in ransom notes, poison pen letters or blackmail demands. The identification of a criminal on the basis of its personality which are also helpful in finding the modus operandi of any serial killer or an insane criminals.

## Review of Literature-

**McNeal (1967)** suggested that during earlier time graphology had been used as a technique for marketing. Hence in his paper he also analysed the data so as to get to know the personality trait of a consumer. He also discussed about the validity and reliability of graphology. He found grapho analysis also helpful in giving the information fast and inexpensively.

**Gluhchev (2007)** suggested the importance of handwriting analysis in the field of forensic investigation. His goal is to make the handwriting investigation system with the involvement of computer based techniques. The method used i.e. the image enhancement technique and the image segmentation technique are used. Image enhancement technique are helpful in improving the quality of image of any handwriting sample which are found in a bad quality and the image segmentation method is helpful in segmenting the image by eliminating the background and the separation of the rows and separation of words. Hence with the involvement of computer based system the graphological analysis is done.

**Coll et.al. (2009)** suggested the method which are used for the extraction, analysis and classification of the writing from the psychological approach. This method is used as a tool for the analysis for the HR professionals whom they consider more reliable than the personal interviews so as to hire the on the basis of the writing. Various features were proposed in their research work like the roundness factor and frequency analysis of any word which is different from person to person.

**Dazzi and Pedrabissi (2009)** examined the validity of the graphological analysis to reveal the personality of an individual. Their work of research was based on the two studies in which the first study deals with the handwriting sample of 101 university students by giving the five big questionnaire. Later the two graphologists were requested to examine the sample with the help of a 9-point scale. Another study deals with the handwriting text with the autobiographical content for further graphological analysis. Hence in this work two graphologists and two laypersons were involved. Based on the observation they found that, there is no authentic graphological method to measure the personality of a person.

**Bancila (2012)** considers the cases of the patients suffering from diseases like Schizophrenia. The sampling is done with the patient suffering from any depressive disorder or syndrome or with the patient who is diagnosed with the disorder. Hence proper segment of the mental illness is considered.

**Cronje and Roets (2013)** carried the graphological studies as the purpose of clinical or diagnostic method. They said graphology as a holistic approach for the analysis and represents the role of graphology as viable in the diagnostic measure and the psychological assessment. With the fact that handwriting is a unique feature as that of fingerprint, hence in his conclusive part they reveal that the person's handwriting seems consistent during the entire time period of his life except some of the intra-variation occurs in the handwriting. The use of graphology is not error free and not infallible but is surely helpful and considered as the significant tool for psychologists for the understanding of human mind with the help of graphological studies.

**Djamal et al. (2013)** used the graphology as for the purpose of revealing the overall picture of personality of a person for the selection of the employees. Hence here the research work is proposed for the recognition of handwriting with the involvement of identification of style of signature and digit of character using the network that can predict the personality of an individual. The outcome of the research work is done with the help of the Artificial Neural Networks.

**Dang and Kumar (2014)** analysed the handwriting by keeping the various characteristics of handwriting in mind so as to examine the personality trait of an individual. In their research performance the

evaluation and identification of the signature by calculating the mean square error with the use of Back Propagation Neural Network (BPNN). The neural network is used so as to make it more accurate and valid. The human behaviour is analysed on the basis of the signature examination.

**Kedar et al. (2015)** proposed handwriting analysis as the emerging field for personality trait information. Keeping in mind that graphology is still an established science because of some of the human error and uncertainty in handwriting sample. They also used the technique for automated personality identification through handwriting i.e. the artificial neural networks technology in which the system is already trained to identify the characteristics of handwriting and match it with the relevant personality trait.

**Kanchana V et al (2015)** used the handwriting analysis for the personal identification of a person. In their work, they use the artificial neural network for the prediction of personality of a person with the help of the extracted features from the handwriting sample. This paper basically focussed with the characteristics of handwriting like baseline, slant and size of letters which are present in individual's handwriting. In this paper, the off-line writer's independent handwriting analysis system is proposed.

**Deshpande (2016)** uses the handwriting analysis for revealing the graphological traits with the involvement of the computerised method named as Back Propagation Neural Network. His research work plays an important role in a way that he used the technique so as to reduce the effort of pen or paper work. Both the use of computational method and the use of software tools as a help and assist the document examiners.

**Singh et al. (2016)** discussed the case report about a patient of MBBS student who is having a complaint in the change in her handwriting from past long time. Hence the graphological studies are helpful in identifying the reason behind it. Also after the detailed interview with the patient it came to the conclusion that the patient is suffering from the depression of conflict with her 5 year relationship bond. Hence on the basis of viewing different writing sample of her either it's a letter sent to his brother whom she is emotionally attached or letter to her teacher whom she had no emotional attachment reveals the mind-set of a patient. The patient

condition were discussed on the basis of the presentation of her high depressive condition revealing the initial complain of her handwriting change. Hence the change in the handwriting converted into the psychiatric symptom of a person.

### Discussion and Conclusion

The inclination of graphology and its importance in various investigation of the cases are analysed by reviewing numerous paper on it. McNeal (1967) worked on graphology and initiated it as a new marketing technique for the hiring of employees by analyses of their handwriting samples so as to reveal the personality of the person.

On the basis of the paper of Singh et.al. (2016), the handwriting analysis used a tool for the understanding of an emotional state of a person which can further incriminate during his/her psychiatric judgement. Though it is helpful in revealing the psychiatric condition of a person, so it will surely plays a very significant role while dealing with the cases related with any suicide or criminal insane activity. As with the known fact that the handwriting is a neuromuscular activity the handwriting itself became a very reliable tool for investigating the cases in the forensic world where profiling of a criminals mind, modus operandi of attempting the crime plays a positive role.

Similar type of observation has been taken in the research work of Bancila (2012) where a case study is discussed which shows the inclination of the grapho-analysis is helpful in solving the investigation

of the case. In this paper it is assisted that handwriting which is useful in giving the additional information for investigators found at the crime scene from the suspect. It is also showed that how handwriting analysis is also turned as a diagnostic feature for the monitoring of patient from psychiatric activity. The criminal or suspect mind is very important and prove to be useful while dealing with the any crime hence the graphological analysis proved to be useful in the forensic investigation of a person so as to narrow down the investigation procedure of any case.

Graphology is an emerging field for the recognition of the personality of an individual. With the help of various analysis techniques one can implement for utilising it for the correct personality information. As we all know that graphology is the applied science but yet not considered accurate due to various human error and the ambiguity in the handwriting samples.

In the present study it has been reviewed and conclusively stated that the graphology is having a great importance in the investigation of various cases related with the handwriting analysis. Automated personality identification through handwriting analysis will proved to be a good and helpful system for personality traits identification. It can find its application in forensic studies by relating it with criminal's mind-set by simply analysing its handwriting.



### References:

Bancila, Violeta Gabriela. "The forensic Importance of Handwriting Pathology in Major Psychiatric Disorders." *International Journal of Criminal Investigation* 2.3 (2012): 209-19. Web.

Coll, Ricard, Alicia Fornés, and Josep Lladós. "Graphological Analysis of Handwritten Text Documents for Human Resources Recruitment." *2009 10th International Conference on Document Analysis and Recognition* (2009): n. pag. Web.

Cronje, Pierre E., and Hester E. Roets. "Graphology in Psychological Assessment: A Diagnosis in Writing." *Universal Journal of Psychology* 1.4 (2013): 163-68. Web.

Dang, Sandeep, and Mahesh Kumar. "Handwriting Analysis of Human Behaviour Based on Neural Network." *International Journal of Advanced Research in Computer Science and Software Engineering* 4.9 (2014): n. pag. Web.

Dazzi, Carla, and Luigi Pedrabissi. "Graphology and Personality: An Empirical Study on Validity of Handwriting Analysis1." *Psychological Reports* 105.3F (2009): 1255-268. Web.

Deshpande, Seemant. "Graphology (To copy any document in User's handwriting): A Review." *Proceedings of 54th IRF International Conference*, (2016): 19-21. Web.

Djamal, Esmeralda C., Sheldy Nur Ramdhan, and Jeri Saputra. "Recognition of Handwriting Based on Signature and Digit of Character Using Multiple of Artificial Neural Networks in Personality Identification." *Information Systems International Conference (ISICO)* 2 (2013): 410-15. Web.

Gluhchev, Georgi. "Handwriting in Forensic Investigations." *International Journal "Information Theories & Applications"* 11 (2007): 42-46. Web.

Kedar, Seema, Vaishnavi Nair, and Shweta Kulkarni. "Personality Identification through Handwriting Analysis: A Review." *International Journal of Advanced Research in Computer Science and Software Engineering* 5.1 (2015): 548-56. Web.

McNeal, James U. "Graphology: A New Marketing Research Technique." *Journal of Marketing Research* IV (1967): 363-67. Web.

Singh, Gaurav Harvir, Radha Jaiprakash Mehta, Deepak Nilima Shah, and Ritambara Yashwant Mehta. "Handwriting change as a psychiatric symptom." *International Journal of Medical and Dental Sciences* 5.1 (2016): 1075-078. Web.

V, Kanchana, Bhavya Ottappurakkal, Silpa Suresh, and Sajini RS. "Personality Identification Based on Handwriting." *International Journal of Emerging Technologies in Computational and Applied Sciences (IJETCAS)* 12.3 (2015): 231-35. Web.