

PalArch's Journal of Archaeology of Egypt / Egyptology

INFLUENCE OF ALCOHOL ON HANDWRITING

¹ Manjugouda R Patil, ²Dr.Channappa.F.Mulimani

¹ Research scholar, Department of Criminology and Forensic science, Karnatak Science College, Dharwad, Karnataka.

²Research supervisor, Associate professor, Department of Criminology and Forensic science, Karnatak Science College, Dharwad, Karnataka.

Oon Sopiah, Citra Resita, M. Arief Setiawan: INFLUENCE OF ALCOHOL ON HANDWRITING -- Palarch's Journal Of Archaeology Of Egypt/Egyptology 17(9). ISSN 1567-214x

Keywords: Questioned documents, Handwriting, Alcohol, Identification.

ABSTRACT

The Document examiners face difficulties in evaluating handwriting by persons under the influence of alcohol. In this research, 180 participants between the ages of 20 and 50, served as volunteer subjects for the experiment. All subjects consumed 180ml of ethyl alcohol. Females have been excluded as they were not voluntarily ready to give the samples. The written material used for standard text was selected based on familiarity and simplicity of content, reasonably balanced number of upper-lower extender, middle zone characters, and each letter of the alphabet was incorporated among the words. Handwriting samples were taken before and after the consumption of alcohol. Along with the samples collected, the specimen writings are also collected. The test was carried out with the help of a stereomicroscope, direct and oblique angle lighting and a video spectral comparator (VSC 2000). Measurements were done using a digital caliper, statistics using Pearson correlation and paired t-test. The analysis is done based on class characteristics and individual characteristics. All handwriting specimens taken were assessed using a multiple-choice checklist. This research aims to determine the influence of alcohol on handwriting, to compare the handwriting of an individual in normal condition and after consumption of alcohol. It can be concluded that there is a substantial change in the writing of an individual under the influence of alcohol. The parameters of handwriting which reveals pronounced distinguish are word length, the height and width of an upper case, the height and width of a lower case, the height of ascending and descending letter, spacing between letters, the

number of tremors were all substantially increased. It is statistically confirmed that the transition in handwriting characteristics is due to the prompt of alcohol.

1. INTRODUCTION

Handwriting is a striking portrayal of an entity's behaviour that gravitates to be susceptible to extraneous considerations. Drugs and hallucinogens of all types, as well as liquor, drop their effect on the neuromuscular system¹. Document examiners are often faced with difficulties in evaluating handwriting by persons under the influence of alcohol. Indeed, alcohol can cause observable effects upon a person's handwriting²⁻⁴ and an amnesic state may occur after alcohol consumption, which raises questions of authenticity in practice as Hilton implied. On the other side, if a person combines alcohol with drugs like triazolam, he may write anonymous or non-anonymous threatening notes and subsequently deny authorship⁵. Numerous research studies, articles and discussions have concentrated on the effect of alcohol on handwriting.²⁻⁸ Occasionally, document examiners are challenged with handwritings written by an individual who is under the sway of liquor. Studies on subjects have implied that the implements are not the same for each individual. In general, however, the writing becomes grander and less well-formed and coordinated. The mode of construction and relative proportions remain the same, but the latter can be toned down by the augmentation and exaggeration. The writing of fanatics and alcoholics will be influenced by significant accumulations of the drugs.⁹ This study was carried out to learn how alcohol and alcohol-related neurological deterioration affect handwritings. They were compared before and after alcohol consumption and evaluated statistically. This research aims to determine the influence of alcohol on handwriting, to compare the handwriting of an individual in normal condition and after consumption of alcohol.

2. METHODS AND METHODOLOGY

In this research, 180 participants between the ages of 20 to 50, served as volunteer subjects for the experiment. The subjects usually visited bars, pubs, parties etc and were ready to volunteer for my research. All subjects consumed 180ml of ethyl alcohol. The drinking was done in a social setting. The participants had no diagnosed health problems and were moderate "social" drinkers. Only skill writers are included i.e. education level up to 10+2 and above. Only the English language has been taken as standard. Females have been excluded as they were not voluntarily ready to give the samples. The written material used for standard text was selected based on familiarity and simplicity of content, reasonably balanced number of upper-lower extender, middle zone characters, and each letter of the alphabet was incorporated among the words. The standard text stated *'This global scientist found a layer of rock in which it was indicated that much life on Earth had suddenly vanished. He'd learned that any hole in the fossil record meant scientists simply had yet to*

provide evidence. The global scientists agreed to carry out a proper analysis of the same as soon as possible. THE RAT THE CAT THE DOG CHASED KILLED ATE THE MALT'. Similar conditions such as a notepad, a standard A4-sized, unlined piece of paper and a medium ballpoint pen were retained in a sober and intoxicated state. They were further briefed to serve a breath analysis after 10 min they held drinking. Before assessing, the conduct of subtlety was executed conforming to the stipulated procedure and the volunteers were guided to rinse their mouth with water. Handwriting samples were taken before and after the consumption of alcohol. Along with the samples collected, the specimen writings are also collected. The writing samples collected in the state of drunkenness were seized under the same conditions as alluded to above. For the statistical evaluation of the data retrieved, the qualitative values were translated into the extensive readings, like tremors are quantified by calculating the number of observations in the samples wherever it was displayed. All the statistical analyses were carried out by employing the Statistical Package for Social Sciences (SPSS 20) version. The test was carried out with the help of a stereomicroscope, direct and oblique angle lighting and a video spectral comparator (VSC 2000). Measurements were taken with the help of digital caliper, statistics using Pearson correlation and paired t-test. The analysis is done based on class characteristics and individual characteristics. All handwriting specimens taken were assessed using a multiple-choice checklist (Table 1).

Table 1. Checklist used for the methodical assessment of handwriting change under the influence of drugs.

Sl.No	Characteristics	Valued Characters
i	Word length	scientists, evidence, possible, CHASED, MALT, 96n02j4U.
ii	Height of upper case character bodies	'H' of He'd, 'T' of The, 'K' of Killed, 'M' of Malt
iii	Width of upper case character bodies	
iv	Height of lower case character bodies	'e' of proper, 'o' of hole, 'm' of same
v	Width of lower case character bodies	
vi	Height of ascending letter character bodies	'd' of Evidence, 'l' of layer, 't' of indicated
vii	Height of descending letter character bodies	'g' of global, 'p' of provide, 'y' of analysis
viii	Spacing between words	'(global & scientist)', (CAT & THE)
ix	Number of Tremors	Count

3. RESULTS

The handwriting parameters such as word length, the height and width of an upper case, the height and width of a lower case, the height of ascending and descending letter, spacing between letters, number of tremor etc were all examined for the interpretation of the proceeds. The data was again statistically

evaluated for the minimal value, maximum value, mean and standard deviation as shown in Table 2. The Paired t-test was applied to Table 2 for the comparing the changes in handwriting after the consumption of alcohol.

Table 2. Changes in handwriting after the consumption of alcohol.

Variable	Condition	Mean	S.D.	Minimum	Maximum	F;P
Word length	Sober	23.28	5.38	11.4	37.84	13.09; 0.0003
	With Alcohol	25.26	5.55	12.24	40.59	
Height of upper case	Sober	4.97	0.77	2.91	7.39	9.95; 0.001
	With Alcohol	5.22	0.76	3.82	7.69	
Width of upper case	Sober	4.25	0.89	2.29	6.62	8.84; 0.003
	With Alcohol	4.52	0.90	2.5	6.98	
Height of lower case	Sober	2.58	0.41	2	3.67	11.62; 0.0007
	With Alcohol	2.73	0.43	2.21	4	
Width of lower case	Sober	2.98	0.41	2.23	3.99	4.11; 0.043
	With Alcohol	3.10	0.54	1.91	5.84	
Height of ascending letter	Sober	5.11	0.81	3.71	6.88	12.67; 0.0004
	With Alcohol	5.34	0.82	3.36	7.23	
Height of descending letter	Sober	5.35	0.78	2.13	6.88	9.02; 0.002
	With Alcohol	5.62	0.64	4.26	6.99	
Spacing between words	Sober	4.62	1.26	1.18	7.79	37.22; 0.0005
	With Alcohol	5.32	1.27	2.62	8.34	
Number of Tremors	Sober	2.44	2.26	0.00	11	9.65; 0.0005
	With Alcohol	4.28	4.86	0.00	22	

F: test value, P: significance of test

The handwriting parameters such as word length, the height and width of an upper case, the height and width of a lower case, the height of ascending and descending letter, spacing between letters, number of tremor were all substantially increased. As for the interrelationship between handwriting characters, the height of descending letter has corresponded with the word length enlargement, a number of tremors and number of tapered ends. A negative association was discovered in the height of upper case with the height of ascending letters as shown in Table 3.

Table 3. Correlation between handwriting parameters of individuals in intoxicated state.

Sl.No	Variable	r	P
i	word length - height of upper case	0.33	0.001
ii	word length - width of upper case	0.31	0.006
iii	word length - height of lower case	0.40	0.0005
iv	word length - width of lower case	0.28	0.0003
v	word length - height of ascending letter	0.14	0.04
vi	word length - height of descending letter	0.24	0.0005

r: test value, P: significance of test

4. DISCUSSION

Because handwriting is arranged mentally and performed neuro-muscularly, it is affected by alcohol consumption. The effect of alcohol specifically occurs first in the frontal lobe, which removes the superego control and then in the cerebellum. Thus, all hierarchical pressings and restrictions are due to authority decrease. This causes emotional, behavioural, psycho-neuro-motor and cognitive changes, such as euphoria, logorrhea, an increase in self-confidence, emotional exaggeration, tremor, obvious unskillful movements, a lack of synergic movements, difficulties in pupil accommodation, ataxic movements depending upon the level of alcohol¹⁰. These data suggest that the physical and psychological effects of alcohol are indeed reflected in handwriting and can be predicted by the selected handwriting characteristics. These changes on handwriting depending upon the effect of alcohol present special problems to the document examiner in evaluating the authenticity of handwriting and in judging whether the writer was sober or intoxicated. Almost all authors agree with the increase in size, carelessness, casualness, deterioration, spacing of writing and decline in legibility at handwriting written under the effect of alcohol.^{2-4, 11-13}. In the examination of "Handwriting of the Alcoholic", Beck, J. a distinctive handwriting changes noticed in alcoholics, specifically individuals in the subsequent stages of the malady. In extension to the two handwriting states of non-alcoholic drinkers (normal/sober and intoxicated), the alcoholic writer has a third state, writing done after of Alcohol withdrawal. Withdrawal is a state of tension culminating in handwriting identified by the infringement, tremor. This type of abnormal handwriting creates particular dilemmas.¹³ In the research on "Handwriting Changes under the Effect of Alcohol" by Asicioglu, F., and Turan, N. an overall of 73 members, who perform all steps of the experiment, were observed. Handwriting sample was collected before and after the consumption of Alcohol. The result declared that handwriting parameters such as a word length, height of upper and lowercase letters, a height of ascending letters, a height of descending letters, a spacing between, the number of angles, the number of tremors, and the number of tapered ends are all substantially enhanced under the implements of alcohol.¹⁴

5. CONCLUSION

First of all, the duty of handwriting examiner is to identify if the questioned and known sample are coming from the same source. Consequently, as this explanatory analysis suggests that differences between sober and intoxicated persons can be identified in handwriting, but the examiner's judgement must be proportionately cautious, keeping in mind the abnormally wide range of variation expected. It can be concluded that there is a compelling change in the writing of an individual under the influence of alcohol. The parameters of handwriting which reveals pronounced distinguish are word length, the height and width of an upper case, the height and width of a lower case, the height of ascending and descending letter, spacing between letters, number of tremor

were all substantially increased. It is statistically confirmed that the transition in handwriting characteristics is due to the prompt of alcohol.

6. ACKNOWLEDGEMENTS

I would like to thank to all the participants for their precious time for the purpose of the study. I would also like to acknowledge all the friends and family of my co-author for their support.

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