

ABOUT THE FEATURES OF CRIMINALISTIC RESEARCH OF FACTORS AFFECTING HANDWRITING CHANGES

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The article highlights the current topic of sustainability of handwriting features under the influence of physiological aging. The focus is on the fact that the study of actual age-specific changes in human mobility in old and old age presents significant difficulties, especially when studying changes in motor functions in the elderly. This is due to the fact that physiological old age is a fairly rare phenomenon and in most cases, when researching the motor sphere of people of old age have to deal with complex interweaving, such as real age changes, as well as motor

The issue of the impact of age-related changes in motor functions of a person in the elderly and senile age was considered, taking into account the distribution into three age groups of people older than 55 years. This was analysed and presented in an article on the sustainability of common features in signatures of older persons.

The necessity of developing a structured methodology for the study of signatures performed by older and older persons in accordance with the state standards for the registration of its results was determined, which would correspond to the level of modern scientific developments.

Key words: *handwriting, handwriting research, motor functions, elderly and senile persons, physiological aging, variability, confounding factor, age group.*

Introduction. Currently, handwriting research is one of the most common types of forensic examination in any judicial proceeding. In the modern world and in Ukraine in general, the development of forensic handwriting has reached a sufficiently high level of development thanks to the solution of a wide range of problems. This, in turn, is connected with the constant addition by handwriting experts to scientific and theoretical provisions, i.e. thanks to constant development over a long period of time.

The analysis of the practice of conducting expert examinations shows that today investigative and judicial bodies often submit questions regarding the execution of handwritten notes and signatures to the expert for decision. Such handwritten objects are found in various types of written

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documents: notarial documents, contracts, mandates, debt receipts, death notes, statements, procedural documents, etc.

A written document is a text document, the information of which is recorded in any type of writing. A written document is the main source of legally significant information. Writing, as a certain process, has a rather complex structure. The specific structure of writing and its mechanism have long been and are the subject of attention of psychologists, criminologists and other researchers. Along with this, the main problem in revealing the structure of writing and the regularities of the functioning of skills is always the physiological organization of the writing-motor process. Motor function during the writing process was and is the subject of special attention of criminologists. This was explained by the fact that handwriting was first of all connected with the system of final movements recorded in manuscripts.

It should be noted that many factors affect a person's handwriting. Despite the relative stability of a particular person's handwriting, certain changes may occur in it under the influence of various circumstances.

Aim. Study of the stability of handwriting signs under the influence of physiological aging.

Results. In forensic literature on forensic handwriting, factors that change handwriting include:

1. Change of the external situation of the letter:

unusual posture;

unusual file device;

unusual material of the letter;

insufficient amount of light or darkness (absence or restriction of visual control).

2. Change the internal state of the person who writes:

the state connected with the age changes of the organism;

the state of increased excitation or generality;

the state of intoxication;

deterioration or loss of vision;

a disease condition, often caused by nervous diseases or mental disorder;

various hand injuries;

violation of nervous and physical state of the writer: stress, fatigue, etc.;

writing the manuscript with the left hand while performing the right hand normally;

3. Unusual setting (task) of the person who writes:

not connected with the intended change of handwriting (unusually slow, early or, conversely, the fastest letter);

associated with the desire of the person who writes to change the handwriting for the purpose of masking.

These include:

a) a quick change of handwriting;

b) print font follow-up;

c) following another person;

- d) changing the way that the writing device is kept;
- e) change of a writing hand.

The stability of written and moving skills, preservation of its peculiarities in writing even in unusual conditions depends on the following factors:

- the degree of formation of written and moving skills;
- peculiarities of the nervous apparatus of human motion control.

It should be noted that the main volume of exhaustive studies is identification tasks. Their solution involves the establishment of such facts: Presence or absence of a certain artist of handwritten text, record or signature; execution by the same or different persons of several texts (records) or signatures, separate fragments of text, text and short record (in particular, notes), in some cases text (record) and signature [1]. According to the method of forensic examination, the task of determining the fact of several black objects performance by one or different persons is decided by the expert, even if such a question is not specifically asked.

Thus, the preservation of the peculiarities of movements of writing in different conditions, the stability (stereotype) of their reproduction is the properties of handwriting, necessary for identification of a person. The peculiarity of the dynamic stereotype of written and moving skills is its variation. Variance this is one of the properties of the written and moving skills. This feature of handwriting is the result of adaptation of written and moving skills to the above-mentioned circumstances of objective and subjective character. V.F. Orlova [2] defines the two nature of the variation in the turn, taking into account the factors of objective and subjective character that influence the formation of written and moving skills.

On the one hand, the variation of the handwriting, in her opinion, is the result of the adaptation of movements in the process of automation of the letter; on the other hand, it is the result of the conscious reorganization of the mechanism of movements in connection with a certain purpose of writing. In a proud can vary both the same features of handwriting, and handwriting in general. In the first case, it is a question of variation of features; in the second case, it is a question of variation in the whole.

It is the variant that reflects the mechanism of adaptation of the person, who is proud of different circumstances, which negatively affect the process of writing. However, such opportunities are not unlimited: At a certain degree of influence on a proud one or another factor, this protective barrier is destroyed. The usual properties of the handwriting are changed, which is shown in the manuscript as diagnostic features. Their complex can give the basis of the expert not only to establish the fact of unusual letter, but also to solve other diagnostic problems: about the nature of unusual (permanent or temporary), about the type of disturbing factors (natural or artificial), their group (internal or external), and in some cases, about the specific disturbing factor that influenced the process of writing [3]. Each of these tasks can be assigned to the expert concerning any one-turn object next to the identification or separately, independently. The possibility of solving such tasks depends on the degree of the diagnostic features in the investigated handwriting object, the presence or absence of comparative material, its quality, the data on the personality of the envisaged performer and the circumstances of the drawing of the handwriting object.

In connection with the fact that the person who writes may have several variants in the handwriting, in the criminal literature the variant formed in the course of studying the letter at school and further life, it is accepted to call the basic one. This variant is most often found in writing different documents, notes, etc. other variants of handwriting, which appeared in a person later as a result of different circumstances of objective and subjective character, it is accepted to call additional. For example, they can be: short-cut masking, writing a manuscript with the following print font, left-handed execution, and so on.

The question of the writing state, the conditions under which the manuscript was executed, often have an important proof point. For example, establishing the fact of alcohol intoxication by the performer of any document (order, testament, etc.) may lead to the recognition of the agreement as invalid and thus affect the crime's qualification.

The results of the latest research on the problem of studying handwriting as an object of forensic handwriting diagnostics indicate that alcohol causes the appearance of a certain complex of signs in handwriting, namely: reduced coordination of movements, reduced coherence, instability of the size of handwriting, placement of words, the size of the intervals between the lines, correction of letters, lack of neatness and clarity (Fig. 1).

The modern idea of the essence of writing and the regularity of the functioning of the writing-motor system of a person provides the possibility of a constructive approach to the study of the issue of establishing the state of alcohol intoxication of the writer based on the signs of handwriting [4].

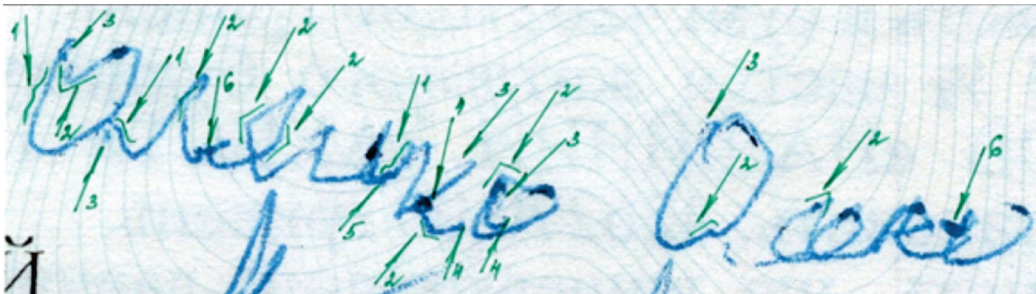


Figure 1. Experimental handwritten note "Олешко" and signature on behalf of O. in the "DONATOR" column of the donation agreement

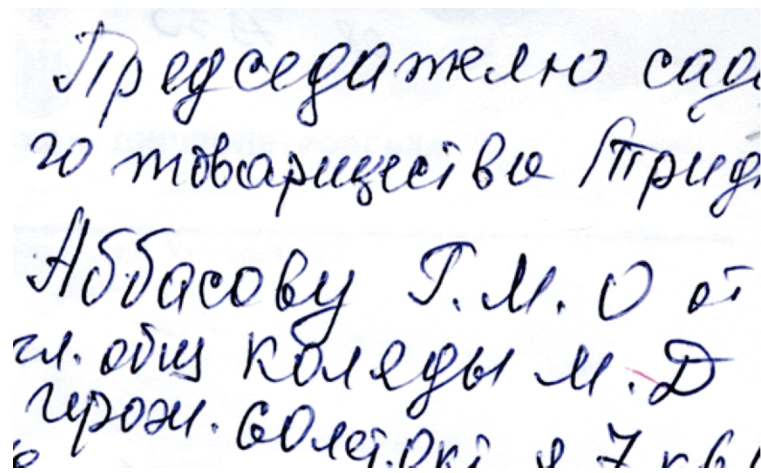
Today, forensic handwriting diagnosis has become an independent field in forensic handwriting. A theoretical base of forensic handwriting diagnostics was created, based on experimental research, symptom complexes of diagnostic signs were identified, these are: natural, they include reasons not related to the desire to change handwriting and most often created by the external environment of writing; artificial - which are in the desire only to change the handwriting and misleading factors. Based on this, separate methods of conducting diagnostic studies of handwriting have been developed [5, 6]. The task of handwriting diagnosis requires as systematic solution based on a theoretical analysis of the provisions of criminology, forensic examination and other fields of knowledge, large-scale experimental research and special methodological developments in the field of handwriting examination. Theoretical propositions and numerous experiments conducted in various fields of knowledge, including criminology, indicate that the

functioning of all body systems, starting with neurophysiological and ending with muscular ones, depends on a person's age [7].

Analysis of the literature, many years of expert practice show that the skill of writing undergoes natural changes throughout the writer's entire life and writing practice. During the formation of handwriting, the written-motor functional-dynamic complex develops progressively and usually stabilizes by the age of 25. Handwriting undergoes significant changes in the process of transition from maturity to old and senile age. Aging is a natural, natural process of changes in the body at the physiological, psychological, and social levels. Over the past 50 years, the process of aging of the nation on a global scale has been developing at a great speed.

Currently, an improved method of researching signatures executed by elderly and senile persons has been developed, taking into account the division into two groups of persons older than 55 years: the first group of elderly people aged 60 to 74 years; the second – the senile 75 to 90 years old.

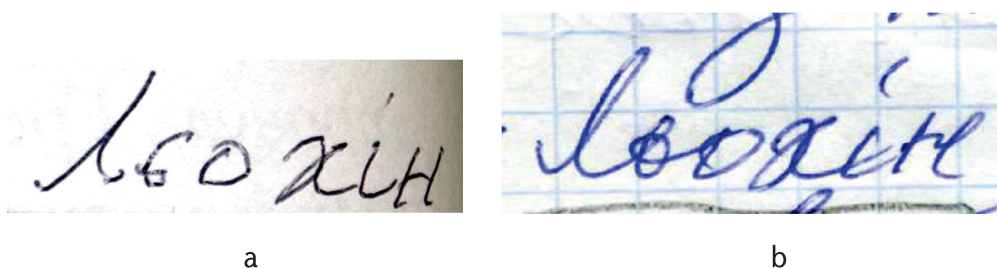
Taking into account the above-mentioned division, it was established by domestic scientists [8] that in persons with highly developed handwriting, who belong to the first age group (60-74 years old), stable common signs include the transcription of the signature, the degree of coordination, complexity and coherence of movements, pace of writing, size, slope, arrangement and acceleration of elements, degree and nature of pressure, direction of the line of the base of the signature (Fig. 2).



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Figure 2. Fragment of an experimental handwritten record on behalf of K. in the application

In the second age group (75-90 years old), the same as in the first age group can be attributed to persistent and relatively persistent symptoms (Fig. 3).



a b

Figure 3. Experimental handwritten record (a) and sample (b) on behalf of L.

As for signatures made with medium-developed handwriting, in the first age group (60-74 years old) stable common features include: transcription of the signature, degree of coordination, complexity and connectedness of movements, size of strokes, pace of writing, degree of pressure, inclination, arrangement and the spread of strokes, the shape of the base of the signature and the direction of its line (Fig. 4; Fig. 5). Placement in relation to the previous word in a blank line can be recognized as relatively stable signs. No unstable general signs were found in this group.



Figure 4. Fragment of experimental handwritten record of Ch. in the "Donator" column of the Contract of donation of an apartment.

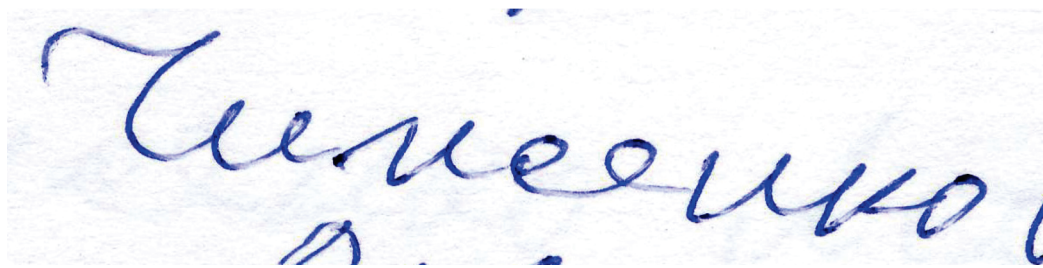


Figure 5. Samples of the handwriting of Ch.

In the second age group (75-90 years old), the same general signs as in the first can be considered stable, with the exception of the shape of the base of the signature and the direction of its line. Relatively stable signs include: the placement of the signature relative to the previous word and blank line, the shape of the base of the signature and the direction of its line. No unstable signs were found.

Along with this, the degree of stability of such signs as: the placement of the signature in relation to the previous word and blank line (slightly), as well as the shape of the base of the signature and the direction of its line (significantly), decreases.

There is also a qualitative change in some general features while maintaining their degree of stability. Thus, the number of signatures made with strong pressure, simplified movements, at a small distance from the previous word increases; the number of widely spaced signatures with straight bases and a horizontal direction of the signature line decreases (Fig. 6; Fig. 7).

The specified qualitative changes in the signatures of persons of the second age group are explained by the strengthening of the influence of age-related changes in the body on the process of execution and placement of signatures by persons with moderately developed handwriting.

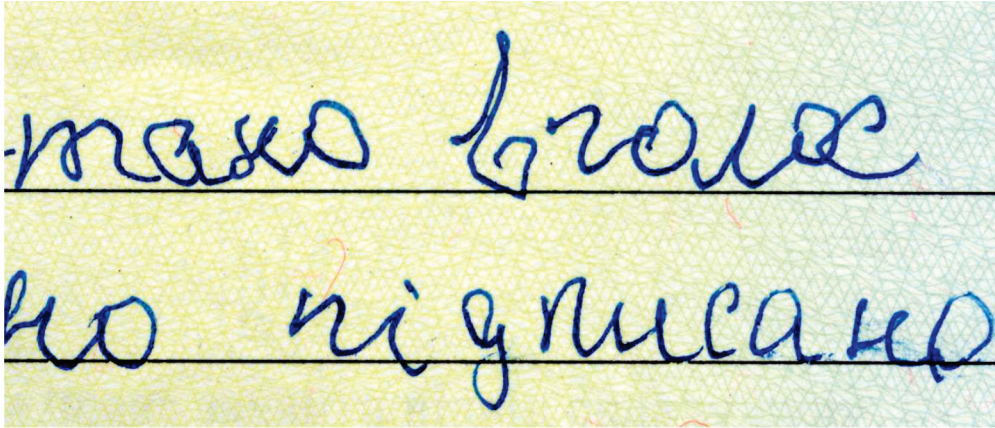


Figure 6. Fragment of experimental handwritten record in the Treatment of Ush.

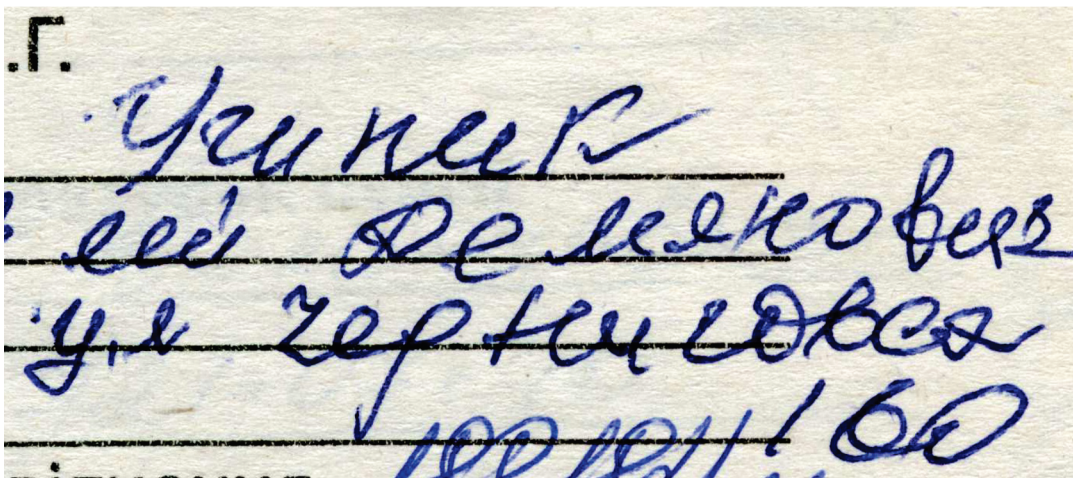


Figure 7. Samples of the handwriting of Ush.

As for signatures made with handwriting below the average and low degree of development, in the first age group (60-74 years old) stable common features include: the degree of coordination and connectedness of movements, the pace of execution, the size of the strokes, the degree and nature of pressure, the direction of the line signature. The following signs can be attributed to the relatively stable ones in this group: the transcription of the signature, the slant of the strokes, the placement of the signature in relation to the previous word and blank line, the shape of the base of the signature. No unstable general signs were found in this age group.

In the second age group (75-90 years old), the same general signs as in the first can be classified as stable, except for the degree of coordination of movements, pace and direction of the base line of the signature. Transcription, the degree of coordination of movements, pace, inclination, arrangement and acceleration of strokes, the direction of the base line of the signature, and placement in relation to the previous word can be considered relatively stable.

At the same time, the degree of stability of such signs as: the transcription of the signature (due to the omission of individual letters), the degree of coordination and the pace of execution, the inclination, arrangement and acceleration of elements, the placement of the signature relative to the previous word and the blank line, the shape of the baseline decreases (at the same time) signature and its direction. Unstable signs appear.

While preserving the degree of stability of certain general features, some of their qualitative changes are also observed. Thus, the number of signatures performed with a lower degree of coordination of movements, at a slower pace, with simplified movements, with little connectivity, with a strong undifferentiated pressure, is increasing.

The specified qualitative changes, as well as a large number of general signs, the degree of stability of which decreases in the second age group, the manifestation of unstable signs, testify to the significant impact of age changes on people with handwriting below the average and low degree of development, when performing their signatures in the process of their application and placement on the document.

Conclusion. Summing up, we can say that the variability of handwriting, as one of the forms of adaptation of writing-motor skills to different conditions (objective and subjective in nature), is not an obstacle to the identification of a person. At the same time, variation should always be taken into account by a handwriting expert, both in identification and non-identification research.

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ՁԵՌԱԳՐԻ ՓՈՓՈԽՈՒԹՅՈՒՆՆԵՐԻ ՎՐԱ ԱԶԴՈՂ ԳՈՐԾՈՆՆԵՐԻ ՔՐԵԱԳԻՏԱԿԱՆ ՀԵՏԱԶՈՏՈՒԹՅԱՆ ԱՌԱՆՁՆԱՀԱՏԿՈՒԹՅՈՒՆՆԵՐԸ

**Նիկոլայչուկ Տ.Վ., Մայսարենկո Օ.Ի., Ջաբուխա Ա., Վ.
Բիլա Ա.Վ., Կովզել Մ.Ա.**

Հոդվածում լուսաբանվում է ֆիզիոլոգիական ծերացման ազդեցության տակ ծեռագրի հատկանիշների կայունության արդիական խնդիրը: Ուշադրություն է կենտրոնացվում այն փաստի վրա, որ մարդու տարեց և ծերունական տարիքում շարժունության տարիքային փոփոխությունների ուսումնասիրությունը զգալի դժվարություններ է ներկայացնում, հատկապես, երբ ուսումնասիրում են տարեց հասակում շարժունության ֆունկցիաների փոփոխությունները: Վերջինիս պայմանավորված է նրանով, որ ֆիզիոլոգիական ծերությունը բավականին հազվադեպ երևոյթ է, և շատ դեպքերում տարեցների շարժունությունը հետազոտելիս ստիպված են լինում գործ ունենալ բարդ միահյուսումների հետ, ինչպիսիք են իրական տարիքային փոփոխությունները, ինչպես նաև մի շարք հիվանդությունների հետևանքով առաջացած շարժողական խանգարումները, որոնք ուղեկցում են ծերացմանը:

Դիտարկվել է տարեց և ծերունական հասակում մարդու շարժունության վրա տարիքային փոփոխությունների ազդեցության հարցը: Հաշվի առնելով հոդվածում նշվածը՝ փորձ է արվել 55 տարեկանից բարձր անձանց բաժանել երեք տարիքային խմբերի: Որոշվել է դրա արդյունքների գրանցման պետական չափորոշիչներին համապատասխան տարեց և

ծերունական հասակի անձանց ստորագրությունների հետազոտության կառուցվածքայնացված մեթոդաբանության մշակման անհրաժեշտությունը, որը կհամապատասխանի գիտական ժամանակակից մշակումների մակարդակին:

Բանալի բառեր. ձեռագիր, ձեռագրի հետազոտություն, շարժողական ֆունկցիաներ, պարեց և ծերունական հասակի անձինք, ֆիզիոլոգիական ծերացում, փոփոխականություն, խառը գործոն, պարիբային խումբ:

ОСОБЕННОСТИ КРИМИНАЛИСТИЧЕСКОГО ИССЛЕДОВАНИЯ ФАКТОРОВ, ВЛИЯЮЩИХ НА ИЗМЕНЕНИЯ ПОЧЕРКА

**Николайчук Т.В., Майстренко О.И., Забуха А.В.,
Била А.В., Ковзель М.А.**

В статье освещается актуальная тема устойчивости особенностей почерка под влиянием физиологического старения. Акцентируется внимание на том, что изучение собственно возрастных изменений подвижности человека в пожилом и старческом возрасте обусловлено значительными трудностями, особенно при изучении изменений двигательных функций в пожилом возрасте. По мнению авторов, это связано с тем, что физиологическая старость является достаточно редким явлением и в большинстве случаев при исследовании двигательных способностей людей пожилого возраста приходится иметь дело со сложными переплетениями, такими как реальные возрастные изменения, двигательные нарушения, возникающие в результате ряда заболеваний, сопровождающих старение.

Рассмотрен вопрос о влиянии возрастных изменений двигательных функций человека в пожилом и старческом возрасте. С учетом изложенного в статье, предпринята попытка распределить на три возрастные группы лиц старше 55 лет.

Определена необходимость разработки структурированной методики исследования подписей лиц пожилого и старческого возраста в соответствии с государственными стандартами регистрации его результатов, которая соответствовала бы уровню современных научных разработок.

Ключевые слова: почерк, почерковедческое исследование, двигательные функции, лица пожилого и старческого возраста, физиологическое старение, изменчивость, смешанный фактор, возрастная группа.

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