

Using graphic productions for identification purposes, and psychological and pedagogical diagnosis

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A person's handwriting, as well as other graphic productions, are treated as a source of knowledge about him/her, and that knowledge is applied when giving opinions in numerous aspects of life. Various scientific disciplines have been long trying, and are still trying, to use this behavioural production to draw conclusions about a person in various ways. The present publication is aimed at presenting the most important areas where graphism constitutes an element of getting to know a person, which is sometimes even the only such element. It should be emphasised that it is not about making evaluations of the accuracy, effectiveness of the developed research methods, but rather showing versatile handwriting applications.

In respect of the raised issue, three basic directions for applications of handwriting as a source of conclusions about a person, as well as the circumstances of the act of writing, can be distinguished. The first one concerns identification of the executor of a handwritten record, and the broadly understood handwriting studies, whereas the second one refers to diagnosing the state of the writing person, and the third one regards using a person's graphic productions in various types of therapies.

The first one regards a possibility to use graphism in order to identify the executor of a writing for the purposes of the pending legal proceedings, where a document containing such a writing or a handwritten signature must be verified for authenticity. What is involved here are comparative analyses of a contested document and comparative material, performed with a use of comparative methods among which the comparative- graphic method plays the leading role, nowadays supported by computer tools in the form of software facilitating the work of an expert, and offering possibilities of analysing various handwriting parameters¹, which are wider now than in the past. This type of research is one the most classical handwriting analyses performed in Poland for the needs of law enforcement agencies and the authorities of administration of justice. In certain cases, it is also applied as part of historical research².

Handwritten records are also used for creating databases for the purposes of investigation and court practice. Some initiatives have already been undertaken throughout the world to set up collections of handwriting samples representative of a particular population, or gathering anonymous documents: threatening or ransom letters, or letters of terrorist character (such as the FISH or Wanda system). The former ones display an endeavour to obtain the so-called objective database which would supply information about the frequency of occurrence of specified features or their groups in a sample representative of a given society, taking into account the criteria including age, sex, educational background, regionalisms, the applied writing agent, writing conditions. Having selected the identification features in an analysed material, the expert — based on the information from such a source — could calculate the probability of a particular group of features repeating in two persons, which would offer a chance for an objective determination of a handwriting opinion reliability. Unfortunately, such a population basis does not exist in Poland, (the only one is a Dutch collection of 25,000 handwriting samples), nevertheless recognition should be given to the method for statistical verification of examined material, described in 1981 by T. Widła, which is an expres-

¹ M. Goc, *Współczesny model ekspertyzy pismo znawczej. Wykorzystanie nowych metod i technik badawczych*, Warszawa-Szczecin 2015, pp. 235–319.

² T. Tomaszewski, “Domniemane listy miłosne Fryderyka Chopina do Delfiny Potockiej”, *Człowiek i Dokumenty* 2010, no. 19, pp. 51–60.

sion of an idea to create a better, objective research tool, with the expert preparing an opinion based on a calculation of the probability of the selected identification features repeating in a particular community³. It is an attempt to objectify and standardise the graphic-comparative method. Nevertheless, as it is based on the conducted statistical analyses of Dutch people's handwriting, it is unfit for a direct use in Poland⁴. For that reason, it has not been applied in the Polish opinion-making practice⁵.

The only Polish database which contains handwriting samples is a Police collection of documents, where anonymous letters are registered. It constitutes a form of protecting the documents for the purposes of future detection and evidentiary actions; it is also a form of models, meaning comparative material for document analyses. This is a collection of anonymous letters involving threats, ransom or blackmail, kept by the Central Forensic Laboratory, comprising an Anonymous Documents Directory where documents that may be related to terrorist, ransom and threatening activity, as well as to organised crime, are gathered and registered; a directory of aliases of the authors of anonymous letters, a directory of identified authors together with handwriting samples collected from them, and a catalogue of font patterns in typewriters⁶. The documents made by hand are kept according to a special formula which is based on the basic features of handwriting, making it possible to identify their authors, and to associate different cases⁷.

Other research based on an analysis of the features of writing may consist in reaching conclusions about the personal identification properties of the executor and/or the author of a writing. Such research is taken up when the circle of the persons to whom that writing belongs needs to be restricted, and therefore such research can be a certain way to reach the comparative material for the purposes of proper comparative analyses. In this case, the source of information is a handwritten record within which

³ T. Widła, "Identyfikacja rękopisów metodą statystyczną", *Problemy Kryminalistyki* 1981, no. 151–152, pp. 330–336.

⁴ A. Koziczak, op. cit., pp. 60–61.

⁵ M. Goc, op. cit., p. 236.

⁶ E. Gruza, M. Goc, J. Moszczyński, *Kryminalistyka, czyli rzecz o metodach śledczych*, Warszawa 2008, p. 403.

⁷ Ibid., p. 581.

an expert explores the features of the handwriting, the so-called material aberrations, including its pathological changes. They can not only provide evidence regarding the executor and/or the author of the writing but also regarding the circumstances in which the document was produced (e.g. assistance offered to the writing person, or an untypical position). It should be also stressed that such an analysis of writing is taken up by a handwriting expert each time during the preliminary stage of the expert opinion, before the proper analysis of the comparative material is carried out. This is caused by the fact that its results offer a possibility to evaluate the quality of the examined material, i.e. the adequacy of the comparative material to the contested material, and they can also constitute a basis to apply, as far as possible, to the judicial body for information about the executor of the writing (his/her age, state of health, mental state, etc.), if the graphism demonstrates disorders. Such knowledge can be helpful in the course of the conducted research, in evaluation, and in the course of clarifying the reasons for the dynamics of changes in the features of graphism; it also allows the expert to avoid an error not attributable to him/her in a situation where the expert would not have access to such relevant information about the state of the writing person or the circumstances in which the writings were produced. Finally, pathological changes in handwriting identified by an experienced expert can be a basis for a judicial body to order medical examination of the document executor. In some cases, the results of such findings can influence the validity of a document (e.g. a testament)⁸.

On the basis of the conducted research, numerous methods for group identification of an executor or author of a text were developed. In Poland, they are called identification or graphological methods⁹. They comprise

⁸ M.A. Wasilewska, "Znaczenie patologicznych zmian pisma ręcznego oraz cech językowo-treściowych, widocznych w wypowiedziach pisemnych", *Jurisprudencja* 2005, vol. 66(58), p. 51.

⁹ A. Koziczak distinguishes three meanings of the notion of *graphology*. 1. *Graphology* as any handwriting analysis: comparative and identifying, 2. *Graphology* as an ability to determine a person's skills, and likes and dislikes based on the person's graphism, 3. *Graphology* as any handwriting analysis consisting in drawing conclusions about various traits of a person based on the person's handwriting sample; A. Koziczak, op. cit., pp. 63–64; A. Feluś supports the idea of understanding graphology in a broad manner, common in many countries, as a science covering such disciplines as the history of hand-

an analysis of both the graphic and the content layer of handwriting. As it is emphasised, these methods cannot be used for giving diagnoses about the state and disease of a person, or about the circumstances in which the writings were produced, since similar handwriting changes can occur in handwritings drawn up in different conditions, as well as in the case of various disease entities. One should also bear in mind the impact of external factors on the image of handwriting, independent of the state of the writing person, as they can result in symptoms similar to the ones resulting from the impact of internal factors. Thus, these changes can only constitute a symptom of e.g. a disease, with that symptom becoming a basis for the use of other research tools, or taking up ordinary procedural actions, e.g. interrogation of a witness to the writing production, or a physician providing treatment.

It is impossible to enumerate all of the identification methods. Such attempts are made in publications regarding handwriting studies. In general, they can be divided into those based on evaluation of the graphic layer, the linguistic and content layer, and those incorporating both these layers. It should be emphasised that the aforementioned methods touch upon various scientific disciplines, and their representatives are many a time their authors¹⁰.

While discussing the problems of identification of persons on the basis of handwriting, one should also take into account a possibility to use it for creating biometric systems which authenticate the identity of persons, aimed at safe and quick verification of a person's identity in terms of his/her authorisation. A signature of a particular person which is collected in the form of a specimen for the purposes of comparing it — if necessary — with the signature appended during particular actions, e.g. in a bank, is applied here.

Handwriting — and more precisely, a signature — belongs to behavioural biometrics as it is a result of an activity taken up by human. It also fulfils the basic requirements imposed on biometrics, namely: universal-

writing (the phylogenetics of handwriting), handwriting technique, the physiology of handwriting (the ontogenesis of handwriting and handwriting disorders), the psychology of handwriting, the identification of handwriting, A. Feluś, *Odchylenia materialne w piśmie osobniczym*, Katowice 1979, pp. 23–37.

¹⁰ A. Koziczak, op. cit., pp. 100–103, 127–128.

ity (each person should have a particular biometric trait), unambiguity (no two persons should be identical taking into account a particular biometric trait), permanence (a particular trait should be invariable in time), collectability (a particular trait should be measurable using a practical gauging device) and acceptability (a given population of users should not have serious objections against measuring a given biometric)¹¹.

However, it should be stressed that a signature, which is a graphic production, is not numbered among the best biometric traits. A disadvantage of the systems based on biometrics is variability of handwriting which may occur in different periods of life and under an influence of different factors. Biometric devices assume an occurrence of certain deviations from the specimen saved in the database, although too big differences increase the error of false reject rate¹². Furthermore, the error rate (false rejections and acceptances) is higher for systems based on signatures than those based on fingerprints, iris image, or hand geometry¹³. It is worth noting that the systems discussed above are sometimes used in Poland by the banking sector as a supporting technology. Due to their imperfections, they are not very common.

As one of the cognitive tools, graphic productions are also taken into account in psychology and they have a practical application in psychological or neuropsychological tests. As it is highlighted, within the discussed scope two groups of views may be specified, i.e. those which negate a possibility to draw psychological conclusions from handwriting, and those which recognize handwriting as a diagnostic tool in the hands of a psychologist¹⁴.

As a proof of the latter view, the Polish studies on psychological handwriting analysis¹⁵, unfortunately sparse in number, can be quoted. These are studies performed by B. Gawda, aimed at diagnosing such personality traits as: schizothymia-cyclothymia, emotional maturity — neuroticism, nominativeness — submissiveness, depressive lack of self-

¹¹ R. Bolle et al., *Biometria*, Warszawa 2008, p. 6.

¹² Ibid., p. 29 et seq.

¹³ R. Bolle et al., op. cit., p. 133.

¹⁴ Z. Górską, <http://zuzannagorska.com/7-powodow-dlaczego-gcp-method-sprawdza-sie-w-rekrutacji/> (access: 17.10.2016).

¹⁵ B. Gawda, *Psychologiczna analiza pisma*, Lublin 1999, p. 9.

confidence, high-low nervous tension¹⁶, situational fear, research conducted by Z. Górski and A. Janicki, regarding identification of the level of extraversion, or finally Z. Górski's research focused on diagnosing neuroticism¹⁷. In the authors' opinion, determining these traits allows for an evaluation of, amongst others, emotional sensitivity, ability to cope with stress, an inclination to react by fear, as well as assuming a trust-based or a fear-based attitude towards other people, or a passive attitude as a way to cope with the environment, profiling leadership or entrepreneurial styles, identifying a need for dominance, achievements, submitting oneself, avoiding information about a failure, or for fun. However, according to psychologists, one cannot define the writing person's occupation (whereas it is possible to tell whether the person is a physical or intellectual worker) or psychological sex¹⁸, on the basis of handwriting.

Further to the above it can be concluded that handwriting constitutes a basis to build a multifaceted personality profile which can be individually used by the examined person it regards, for example in order to plan the professional career direction, or for the purposes of selecting personnel or building work teams¹⁹.

Nowadays, the latter trend is quite a popular tool applied worldwide. According to the figures, approx. 80% of enterprises in Europe²⁰ use the handwriting analysis method in personnel selection and employee recruitment. The GPC Method — Graphological Competence Profile designed by Z. Górski used for creating a personality profile, is advertised in Poland. It describes four areas which are of key importance for business tasks: the style of functioning, communication and cooperation with others, emotionalism and motivation, as well as leadership style. As it stems from the general method description available on the Author's website, the accuracy and credibility of the examined traits exceeds 80%²¹, and combining handwriting analysis with other recruitment tools (inter-

¹⁶ Ibid., p. 10 et seq.

¹⁷ Z. Górski, <http://analiza-pisma.pl/metodologia/> (access: 17.10.2016).

¹⁸ Ibid.

¹⁹ Ibid.

²⁰ K. Stemplewska-Żakowicz, *Diagnoza psychologiczna. Diagnozowanie jako kompetencja profesjonalna*, Gdańsk 2009, p. 127.

²¹ Z. Górski, <http://analiza-pisma.pl/metodologia/> (access: 17.10.2016).

view, references, knowledge) increases the chance of employing the right person for a particular position²².

Nevertheless, while reviewing other Polish publications devoted to that issue, one can notice that there is no unanimity regarding the possibilities of using graphism for the purposes of recruitment and personnel selection. Some authors consider the handwriting-based methods for personnel selection to be unconventional²³. K. Stemplewska-Żakowicz even denies that this is a credible tool, claiming that the analysis of handwriting is wrongly recognised as a source of psychological diagnosis²⁴. By contrast, some publications totally omit the possibility to draw conclusions on the candidates' predispositions based on their handwriting²⁵.

When addressing the problem of psychological diagnosis, one should also refer to the use of drawings as a non-verbal source of knowledge about the examined person. They form a basis for some projective tests which — generally speaking — rely on the “idea that human personality leaves a mark in his/her productions”²⁶. The proposed techniques are used for, amongst others, assessment of intellectual performance, detection of irregularities in the brain functioning, measuring educational progress, evaluation of the degree of emotional disorders, or personality identification²⁷.

Nowadays, a projective drawing is strongly criticised, and the main charge raised against this method of learning about a person is the lack of convincing empirical evidence for their diagnostic value. Three kinds of interpretations based on drawings are distinguished. This is an impressive approach (the diagnostic conclusions are based on the diagnostician's general impressions of the drawing without formalised interpreting categories and scoring systems), focused on indications (certain distin-

²² Z. Górską, <http://zuzannagorska.com/7-powodow-dlaczego-gcp-method-sprawdzanie-w-rekrutacji/> (access: 17.10.2016).

²³ K. Szkop, “Trafność metod doboru personelu wykorzystywanych w przedsiębiorstwach”, [in:] *Procesy decyzyjne w warunkach niepewności*, ed. A. Grzegorzczak, Warszawa 2012, p. 129.

²⁴ K. Stemplewska-Żakowicz, op. cit., p. 127.

²⁵ See M. Suchar, *Rekrutacja i selekcja personelu. Poznaj sekrety dobierania pracowników najlepszych dla Twojej firmy*, Warszawa 2003.

²⁶ K. Stemplewska-Żakowicz, op. cit., p. 106.

²⁷ G.D. Oster, P. Gould, *Rysunek w psychoterapii*, Gdańsk 1999, p. 29.

guished features of a drawing are considered as indications of various psychological variables; the Draw-a-Person Test, the House-Tree-Person Test, the Draw-a-Tree Test), as well as a comprehensive approach (no independent diagnostic value is assigned to the individual properties of the drawing; a specified set of indexes has this property. According to some psychologists, only the latter approach is considered as admissible in psychological diagnosis. In Poland, the Draw-a-Tree Test and the Draw-a-Family Test²⁸ are the most popular tests based on indications.

The literature highlights that experts' opinions conducted at the request of a court, and involving drawing-based projective techniques are not reliable and can be contested as incompliant with the scientific validity criterion according to Daubert standard²⁹ which assumes that in order to be referred to as scientific evidence, a particular research method or technique must be, firstly, testable, which means that it needs to undergo a testing procedure; secondly, it has already been described in specialist literature; thirdly, it has been subjected to scientific assessment (the so-called peer review); fourthly, the potential rate of error must be known in the course of its application; fifthly, it must incorporate scientific standards "conditioning an acceptable application of a particular research method"³⁰; sixthly, a research method or technique must be generally accepted by the scientific community³¹.

One can also encounter another view according to which – although projective tests "in a statistical sense, cannot be recognised as infallible or applicable personality assessment", they can still constitute an additional instrument, additional aid during an interview.

This is because empirical evidence is not always crucial when justifying the usefulness of a given diagnostic procedure³².

²⁸ K. Stemplewska-Żakowicz, op. cit., p. 106.

²⁹ Ibid., p. 108.

³⁰ M. Goc, op. cit., p. 51–52.

³¹ Ibid., p. 52 et seq.

³² In 1999, Gdańskie Wydawnictwo Psychologiczne [*The Gdańsk Psychology Publishing House*] released a paper by G.D. Oster and P. Gould, *Using Drawings in Assessment and Therapy: A guide for mental health professionals*, translated into Polish. The Polish edition was edited by prof. dr hab. of medical sciences Hanna Jaklewicz, psychiatrist. G.D. Oster, P. Gould, *Rysunek w psychoterapii*, Gdańsk 1999, p. 13.

J. Grębowiec-Baffonii gives her opinion on using a drawing for psychological diagnosis — in her extensive reflections on “reading” children’s drawings, she highlights the fact that they are a source of information about the level of intelligence and temperament, it communicates what the child is unable to say, not because he/she has not properly mastered verbal messages but because a drawing — which is a graphic expression — can be information originating in sub-consciousness³³.

In pedagogical-psychological diagnosis, written productions (including drawings) can be used for school readiness assessment of a child, especially for assessment of the child’s motor development, and one of its elements is evaluating lateralisation³⁴ process which — apart from the parents’ interview and observation of the child both in natural and arranged situations — also involves an analysis of, amongst others, the child’s “productions” made with the left and the right hand, including: a drawing of a house, drawing on a trace of two concentric circles, tracing patterns³⁵. The purpose of these analyses is to assess the type of lateralisation and — in consequence — the regularity of its development. However, if its retardation is identified, some actions can be taken up to support its normal development with exercises³⁶.

Handwriting, or rather its disorders, play an important role in recognising various educational difficulties, including dysgraphia which is one of the so-called non-specific learning difficulties, in general referred to as dyslexia. The whole diagnostic process is complicated and requires

³³ J. Grębowiec-Baffoni, “Od rysunków do pisma. Kształtowanie sensu w przeobrażaniu myśli o świecie”, [in:] *Dziecko w przestrzeni słów i znaczeń*, ed. E.K. Kochanowska, J. Wojciechowska, Bielsko-Biała 2013.

³⁴ J. Bala, E. Klima, M. Bogdanowicz, *Ocena lateralizacji czynności ruchowych. Zestaw zadań diagnostycznych*, p. 5, <http://www.zabawkipilch.pl> (access: 17.10.2016).

³⁵ *Ibid.*, pp. 9–10.

³⁶ *Ibid.*, p. 31, more information about lateralisation therapy can be found in numerous publications, e.g. M. Bogdanowicz, “Profilaktyka i terapia w pracy z leworęcznym uczniem — wskazówki metodyczne”, [in:] *Terapia pedagogiczna*, ed. J. Włodek-Chrońska, Kraków 1998; E. Kruszyńska, E. Łukaszczyk, *Zestaw ćwiczeń korygujących dominację stroną. Materiały pomocnicze do pracy korekcyjno-wyrównawczej w przedszkolu*, Katowice 1976; B. Rechnio, “Praca z dzieckiem leworęcznym”, *Wszystko dla szkoły* 2005, no. 2; H. Spionek, “Trudności w nauce czytania i pisanja u dzieci a poziom funkcjonowania sprawności analizatorów”, *Psychologia Wychowawcza* 1963, no. 3.

gathering the necessary information, and it is conducted in three stages. During the first stage, the child's parents are interviewed. The interview is a source of information about the child's development during the pregnancy, labour, the conditions of his/her growth, the course of kindergarten and school career, learning motivation, extent of educational assistance provided by the family, etc. The second stage involves speech diagnosis aimed at identifying whether the reading or writing difficulties are or are not a result of speech defects. During a writing activity, such defects may translate into a graphic image³⁷. Also a medical examination is significant in order to eliminate a disease as the reason for learning difficulties (e.g. degenerative brain changes, hearing impairment, visual impairment, or neuroses). Accordingly, various examinations, including a phoniatic, psychiatric, ophthalmologic, or orthodontic one, can be recommended³⁸. A psychological examination is also relevant, as it evaluates the level of mental development, the development of perceptive and motor functions responsible for the quality of the reading and writing process such as perception and visual memory, perception and auditory memory, motor skills, lateralisation, visual-motor coordination and the pace of learning graphic symbolic material. It also determines the quality of other cognitive functions. And thirdly, a pedagogical examination provides an assessment of writing and reading skills, phonematic hearing, as well as direct auditory memory, an analysis of reading and writing mistakes, the graphic level of the writings and the knowledge of orthographic rules, and finally it includes an analysis of individual written statements³⁹.

In case of identified dysgraphia, as well as with regard to other identified difficulties with acquiring the reading and writing skills, or personality disorders, exercises involving writing activities play a significant role in the therapy of the diagnosed persons. As practice indicates, drawings improve communication, expression, offer pleasure, and enhance the sense of control and satisfaction. Graphic productions can also be a determinant of therapeutic progress, they can disclose the dynamics of personality and hidden conflicts. The drawing activity facilitates spontaneity

³⁷ M. Calkiewicz, *Kryminalistyczne badania patologicznego pisma ręcznego*, Warszawa 2009, pp. 107–108.

³⁸ *Ibid.*, pp. 108–109.

³⁹ J. Mickiewicz, *Jedynka z ortografii*, Toruń 1997, p. 24.

in young children, and it helps adults to overcome obstacles in personal development⁴⁰. The aforementioned exercises are sets of tasks aimed at improving and synchronising perceptive and motor skills, synchronising analytic and synthetic functions in the visual and auditory area⁴¹.

As it stems from the above overview, the possibilities of drawing conclusions and using graphic productions within the discussed scientific disciplines are quite vast and they suggest that, in some cases, handwriting can be the only source of identification of the executor of such writing, e.g. as part of handwriting expert opinion, and its conclusions can be formulated on a high level of certainty, or they can be even categorical. In terms of the possibility to draw conclusions about the quality of cognitive processes, mental functions, or personality traits, in most cases, handwriting is treated as one of the tools for conclusion purposes. As it has been mentioned, in a handwriting expert opinion in its broad sense, (identification and identifying analyses), graphism is not used for giving a diagnosis of the executor's state or of the circumstances in which the writing was produced. It can be only considered as a symptom of e.g. disorders, where such a symptom may be a basis for the expert and the judicial body to take up relevant actions, whereas psychology and pedagogy treats a graphic production as one of the diagnostic tools, or a tool to evaluate the progress of various disorders or the effectiveness of the implemented therapy.

⁴⁰ G.D. Oster, P. Gould, op. cit., p. 14.

⁴¹ Zob. B. Zakrzewska, *Jeszcze potrenujemy: ćwiczenia w zakresie wzrokowo-słuchowym*, Warszawa 1998; B. Sawa, *Jeżeli dziecko źle czyta i pisze*, Warszawa 1994; T. Opolska, *Pokonujemy trudności w czytaniu i pisaniu: przegląd metod pracy korekcyjno-kompensacyjnej*, Warszawa 1997; E. Waszkiewicz, *Zestaw ćwiczeń do zajęć korekcyjno-kompensacyjnych dla dzieci przedszkolnych*, Centrum Metodyczne Pomocy Psychologiczno-pedagogicznej Ministerstwa Edukacji Narodowej [*Methodological Centre For Psychological and Educational Assistance of the Ministry of National Education*] Warszawa 1994; J. Jastrząb, *Usprawnianie funkcji percepcyjno-motorycznych dzieci dyslektycznych*, Centrum Metodyczne Pomocy Psychologiczno-pedagogicznej Ministerstwa Edukacji Narodowej Warszawa 1994; J. Jastrząb, *Gry i zabawy w terapii pedagogicznej*, Warszawa 1994, Centrum Metodyczne Pomocy Psychologiczno-Pedagogicznej Ministerstwa Edukacji Narodowej.

Summary

The problem raised is important inasmuch as drawing conclusions from handwriting may, in many cases, determine a person's fate, which does not only involve opinion making in criminal or civil cases, but also those related to applying a relevant therapy to a person with mental function disorders, or psychiatric and neurological disorders; to proper guidance on a child's school career or an adult person's professional career development; to a possibility of undertaking a particular action, etc. It shall also be highlighted that the following reflections present Polish realities with regard to the raised problems, and they also show some controversies which arise with regard to the selected cognitive methods. The present publication is primarily addressed to practitioners, i.e. persons who — for their professional reasons — hire handwriting experts, and evaluate the opinions issued by such experts, meaning the broadly understood judicial bodies. It can also serve as a teaching aid for students attending forensic, criminal or civil procedure courses.

Keywords: handwriting, handwriting studies, handwriting expert opinion, person identification, expert, handwriting analyses methods, psychological diagnosis, pedagogical diagnosis.