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SIMILARITY OF GRAPHIC FEATURES IN FAMILY, PROFESSIONAL AND ACCIDENTAL HANDWRITTEN RECORDS

Abstract: This publication concerns the problem of similarities appearing in the records of different persons, and it presents this issue in practical terms based on examples covering handwriting samples taken from members of the same family, persons pursuing the same profession, or unrelated persons. Its objective is not only to emphasise the existence of this phenomenon and its importance for opinion-making in a handwriting expert opinion process regarding the author of a handwritten transcript, but also an attempt to identify the handwriting features in which these analogies occur.

Keywords: handwriting expert opinion, handwriting analysis, handwriting features, expert

INTRODUCTION

Similarity of handwritten records produced by different persons is a problem present in opinion-making practice serious enough to be discussed in scientific publications due to the consequences that may emerge from ignoring this phenomenon, which unfortunately happens in expert practice.¹ Nevertheless, despite an assumption of the unique character of handwriting, this phenomenon should be treated as natural and individual, since handwriting is treated and considered as a whole, whereas individual identification features can be of a narrow- or broad-group nature, meaning that both the similar graphic solutions and their groups may appear in records produced by different persons. Thus, an expert conducting a handwriting analysis should have knowledge about the frequency of graphic structures appearing among the writing population. This knowledge constitutes a basis for a comprehensive study on a properly collected research material, taking into account various groups of handwriting features, and an assessment of

¹ Examples from expert practice are presented in: T. Tomaszewski, "Zbieżne cechy grafizmu źródłem pomyłki biegłego", *Człowiek i Dokumenty* 2009, no. 15, pp. 43–50 ; idem, "Ku przestrodze biegłych: Przypadkowe podobieństwo grafizmów", *Człowiek i Dokumenty* 2015, no. 39, pp. 51–58.

the distinguishing identification features. Only such comprehensive handwriting analyses can entitle one to formulate correct conclusions and eliminate the risk of error in the opinion-making process.

Taking into account various publications devoted to the issues included in the title of this paper, one can distinguish environmental similarities of handwriting emerging from the fact of a given person functioning in a particular social group or groups. They can include similarities among family members, professionals, schoolmates or friends. Another type comprises accidental similarities which are the most difficult ones to deal with, since they cannot always be identified, while the last separate group includes analogies of handwritings produced by means of copying or imitating the handwriting of another person by a forger.²

An important issue which can be considered in the context of the analyzed problem is a possibility to specify the graphic features within which similarities in records produced by different authors occur most frequently. For that purpose, handwriting samples with noticeable similarities were collected, and divided by their type according to the classification presented above. Next, the handwriting features were analyzed with a view to distinguishing both the similar and the divergent ones, and indicating whether there are some regularities in the type of recurring convergent identification features.

1. FAMILY SIMILARITIES

One of the types of environmental similarities are found in familial handwritings, including those produced by twins. The first example concerns similarities present in the handwriting of dizygotic twins, 12-year-old girls attending the same class at a primary school and spending a lot of time together.

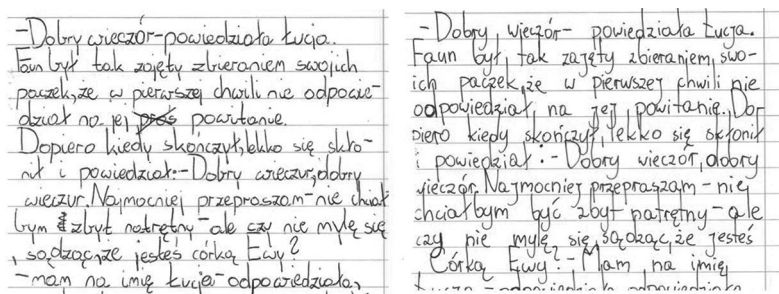


Figure 1. General image of handwriting of 12-year-old twins

² See T. Widła, “Przypadkowe podobieństwa grafizmów”, [in:] *Problematyka dowodu z ekspertyzy dokumentów*, vol. 1, ed. Z. Kegel, Wrocław 2002, pp. 383–391; Ch. Uhlig, “Podobieństwa pisma u bliźniąt jedno- i dwujajowych”, [in:] *Problematyka dowodu...*, pp. 331–336; C. Grzeszyk, E. Grzechnik, “Badanie pisma ręcznego bliźniąt”, [in:] *Problematyka dowodu...*, pp. 196–207, ?; T. Tomaszewski, “Zbieżne cechy grafizmu...”, pp. 43–50; T. Tomaszewski, “Ku przestrodze biegłych...”, pp. 51–58.

In this case, the analogies between the graphism of both children result from conscious or unconscious imitation of the way the graphic signs are drawn, as well as from the level of handwriting development which still demonstrates an impact of a calligraphic model, although some modifications already appear in the graphism.

A comparison between the handwriting samples from the twins offers a basis to identify convergences in the general image, development level and the size of handwriting. What is also noticeable is a tendency to enlarge the capital letters, a similar topographic arrangement of the record, i.e. the layout of the text on the substrate, as well as the size and shape of the left margin (Fig. 1). Moreover, in both of the records excessive elongations of the upper zone are present, with certain graphic signs constructed, and diacritical and supplementary marks placed in a similar way (Fig. 2). What is also analogous is the arrangement of the handwriting impulse (the number of graphic signs connected without the writing agent being detached from the substrate) which is mixed, with the prevailing character of the letters (Fig. 3).

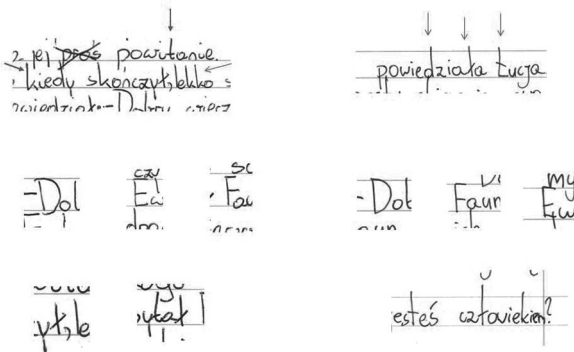


Figure 2. Convergent arrangement of measurable and structural features in the handwriting of 12-year-old female twins

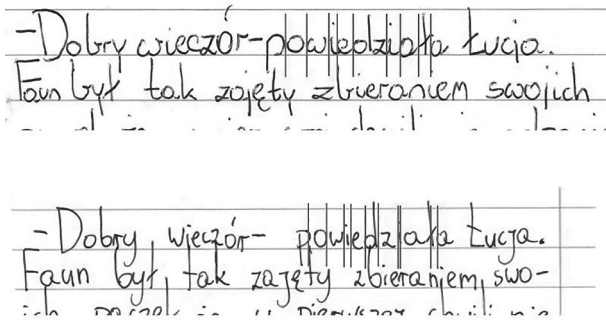


Figure 3. Similar arrangement within the handwriting impulse

Apart from the similarities specified above, some discrepancies between the analyzed handwriting samples can also be identified. An analysis of the features of graphism make it possible to distinguish relevant differences, which include, for

example: distinct elongations of the lower zone, the structure of certain graphic signs: *y*, *n*, *m*, *j*, no dot above the letter *j* in one of the samples.

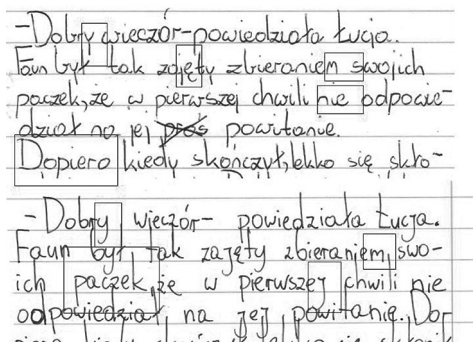


Figure 4. Features differentiating the handwritings of 12-year-old twins

An example of the handwriting of adult twins — a man and a woman in their twenties — also supports the idea of the existence of similar handwritings. Like in the previous example, similarities concern the general image, the level of development, the size of handwriting (Fig. 5), the structure of certain graphic signs, and additionally — the connections in the elements of the graphic signs — bars and dots (e.g. above: the letter *i*) with the following sign (Fig. 6). Also a similar prevailing letter and a two-letter impulse of handwriting is noticeable (Fig. 7).

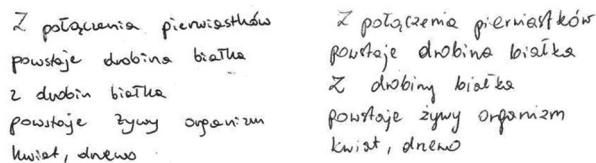


Figure 5. General image of handwriting of adult twins

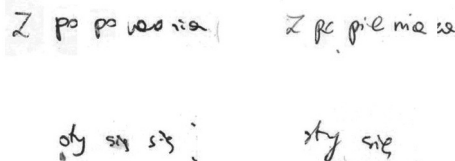


Figure 6. Similar structure of certain graphic signs with regard to their construction and connections

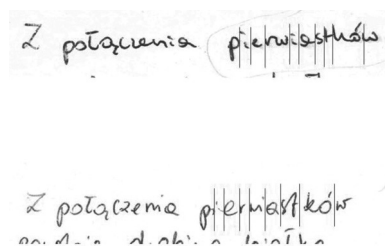


Figure 7. Similarity of handwriting impulse

Świeżo gęsto jak gwiazdy, widać
 Okazy widać tany ogromne
 Ciężkie, zapewne należne
 Uprawne dobrane na kształt ogon

Świeżo gęsto jak gwiazdy, widać &
 Okazy widać tany ogromne ugi
 Ciężkie, zapewne należne do
 Uprawne dobrane na kształt ogonów

Figure 11. Similar arrangement in handwriting impulse

The divergences present in this example appear in the structure of certain graphic signs, e.g. *u*, *a*, *k*, *sz*, in diacritical marks, dots and strokes (Fig. 12).

Okazy widać tany ogromne ugoni
 Ciężkie, zapewne należne do dworu,
 Uprawne dobrane na kształt ogonowych gwiazdek
 że w tym domu dostatek mięsa i porządek
 Brauna na wież otwarcie przedmiotów ogona
 że gościnnie i wspaniale w gościnie sąpudszca

Okazy widać tany ogromne ugoni
 Ciężkie, zapewne należne do dworu,
 Uprawne dobrane na kształt ogonowych gwiazdek
 że w tym domu dostatek mięsa i porządek
 Brauna na wież otwarcie przedmiotów ogona
 że gościnnie i wspaniale w gościnie sąpudszca

Figure 12. Differences in the features arrangement in the handwritings of two persons from one family

2. PROFESSIONAL SIMILARITIES

The first example of professional similarities refers to the graphisms of two women, both of them accountants, who have been in the profession for approximately 25 years, and work together. Undoubtedly, this profession requires accuracy, conscientiousness, hence the records of this professional group are usually clear, aesthetic and well-developed. Such convergences also occur in this case, yet the remaining ones appear in other synthetic features, including the general image, class, legibility of handwriting, and topographic features regarding the size and

shape of the left margin and the structure of certain graphic signs and connecting strokes (Fig. 14). The handwriting impulse, which is mainly a letter or two-letter one, is also similar (Fig. 15).

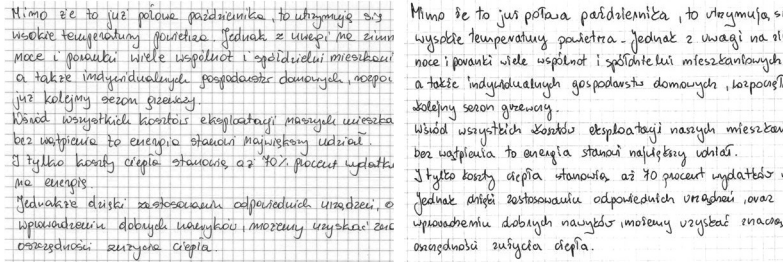


Figure 13 Professional similarity of handwritings produced by women accountants

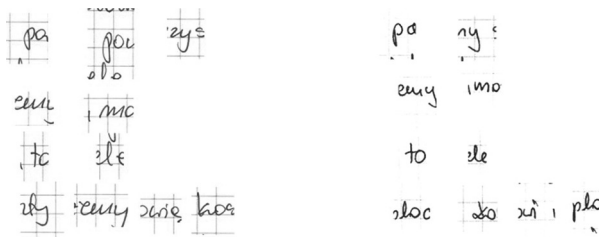


Figure 14. Similar structure of certain graphic signs

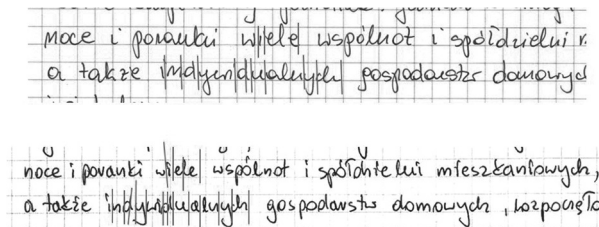


Figure 15. Similar handwriting impulse

An analysis of certain features also allows for identifying the differences present e.g. in the structure of certain graphic signs, the size of middle zone and the shape and location of diacritical marks.

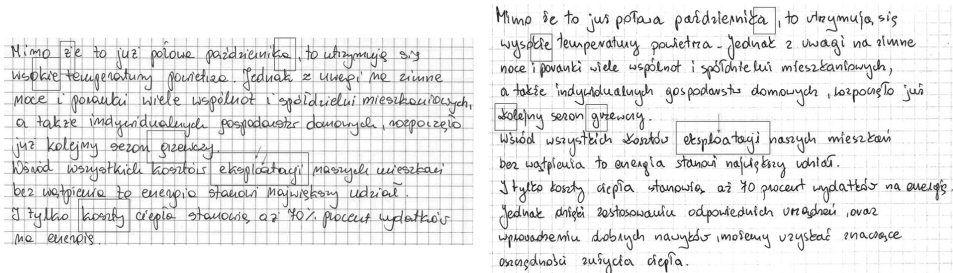


Figure 16. Divergent features present in the records of two women accountants

Similarities in records can also appear in the handwriting of physicians. They can be a result of a fast pace of writing that forces the author to simplify the graphic signs and decreases the legibility of a record, which can cause convergences of handwriting legibility level, brevity, pace, handwriting simplification (Fig. 17), the way of connecting and building certain graphic signs, the spaces between letters and words (Fig. 18), and the handwriting impulse which appears at the word level (Fig. 19) to occur. It can be concluded that the more simplified handwriting is, the more similar it is in terms of the general image.

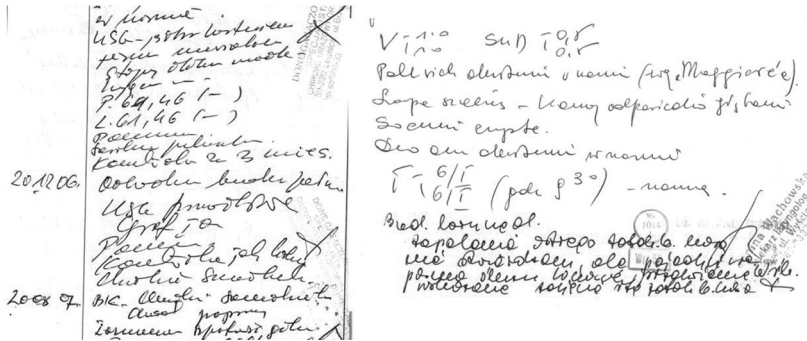


Figure 17. Similar legibility, brevity, pace and simplification level in doctors' graphism

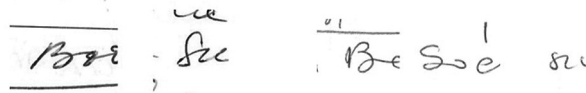


Figure 18. Similar way of connecting certain letter groups

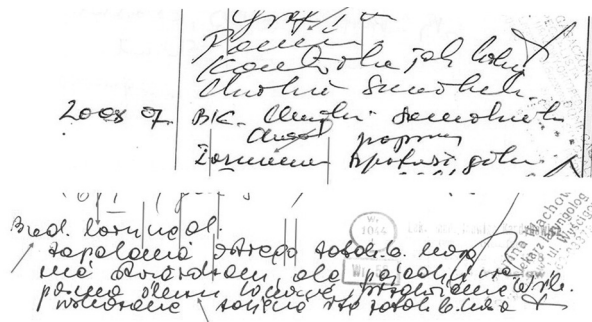


Figure 19. Similar handwriting impulse

The features differentiating the discussed graphisms can include, among others, the general handwriting image: in the first example it is more slender, while in the second one it is round. The proportions of upper zone elements with regard to the middle zone ones are also divergent: in the first sample the upper zone el-

ements are elongated, and in the second one they are rather shortened in relation to the middle zone.

3. ACCIDENTAL SIMILARITIES OF HANDWRITINGS

The records produced by two female students (aged 23), who do not know each other and studied at different times, serve as an example of accidental similarities. What is similar in this case is the general image of handwriting, the handwriting class, the handwriting size and the arrangement of the left margin, the proportions of the middle zone and upper zone elements, the structure of certain graphic signs and the connections between letters.

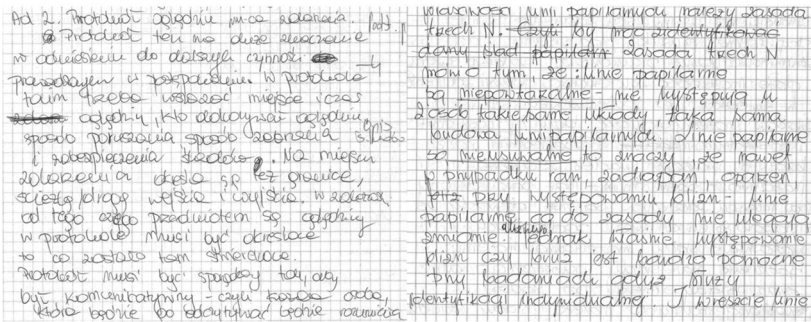


Figure 20. Similar records produced by two female students who do not know each other

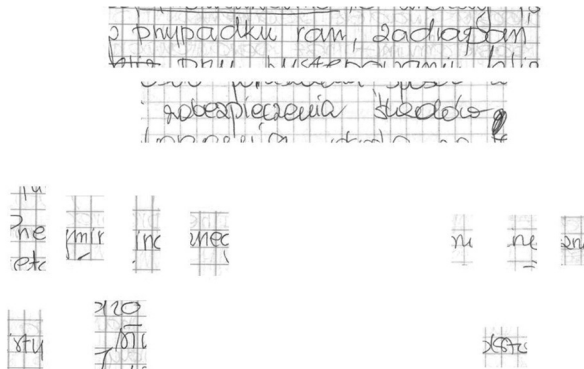


Figure 21. Similarity in the proportion and construction of graphic signs and certain connecting strokes between letters

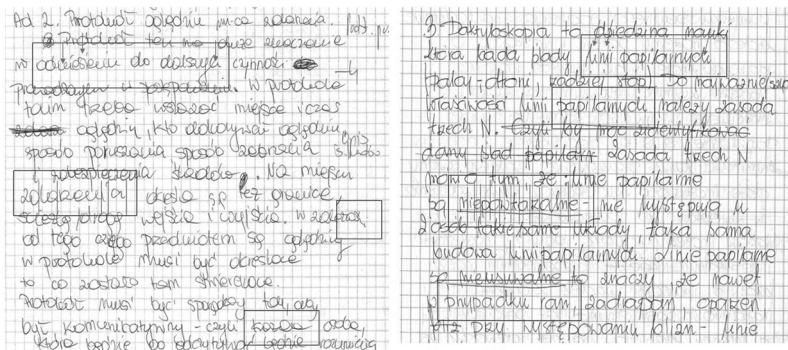


Figure 22. Divergent features in compared records

Despite the convergent handwriting features present in the compared records, one can also identify divergences which concern, among others, certain connecting strokes, the handwriting impulse, the spaces between letters, and simplifications of graphic signs and of the text arrangement on the baseline (Fig. 22).

SUMMARY

The presented analysis of graphisms allows for formulating several conclusions. It may be noticed that the similarities among familial, professional and accidental records cover various groups of handwriting identification features, including synthetic, topographic, measurable, motor and structural ones.

The analogies which appear most frequently in handwritten records refer to the handwriting class and the general image of handwriting. They are present in almost all of the examples discussed above. These similarities are the reason why sometimes, at first sight, one can get the impression that the handwritings were produced by one person.

Structural features are another group that often shows convergences, however the occurring similarities refer only to certain graphic signs, their elements, sometimes also their groups, certain connecting strokes between letters or particular elements of letters, the manner in which the initial and final lines are started, as well as the location and modelling of diacritical marks.

Similar topographic solutions are noticeable as well, particularly regarding the spaces between words and letters, or the size and shape of the margins.

Convergent features can also concern the measurable features, most frequently including the size of handwriting and the proportions of the upper zone, lower zone and middle zone elements towards one another.

In terms of the motor features of handwriting, analogies are visible in the writing pace, as well as in the handwriting impulse.

The similarities appearing in handwritten records only concern certain identification features rather than their quality and quantity group. Therefore, it can be concluded that they are usually ostensible, and a comprehensive and detailed analysis of various groups of graphic features, taking into account the phenomenon of their repetitiveness among the writing population, and based on a properly collected comparative material, is a basic element to identify the divergences which — along with the convergences — should be properly evaluated in terms of their identification value.

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