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The Role Of Graphology In Child Psychology

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Abstract: Graphology is a field that attempts to identify personality and psychological characteristics through written behavior (handwriting). However, within the context of modern scientific psychology and diagnostics, there are conflicting views regarding its reliability and practical application. This article analyzes the theoretical foundations of graphology, the relationship between handwriting and psychomotor development in children, the use of graphology in child psychology, the results of scientific studies, its limitations, and ways of careful integration. The article also presents examples from recent research, digital graphology, and algorithmic methods, and provides recommendations for the proper application of graphology in child psychology.

Keywords: Graphology, child psychology, handwriting analysis, psychodiagnostics, graphotherapy, algorithmic handwriting analysis.

Introduction: Although Graphology is a field that studies the relationship between the human mind and handwriting; it derives from the Greek words “graphō” (I write) and “logos” (doctrine). In the 19th century, Jean-Hippolyte Michon attempted to systematize the elements of writing and for the first time raised graphology to the level of a systematic science. Later, Jules Crépieux-Jamin sought to link graphic features—such as letter shape, pressure, speed, and spacing—to personality. William Preyer (1895) advanced the idea that “handwriting is the expression of the person.” Gordon Allport (1937) defined graphology as “a projective method of personality.” In the last century, scholars in several European countries conducted serious research on graphology and founded their own graphological schools. Below are the most important:

The French school (J. Crépieux-Jamin, R. Vinar) — developed a systematic approach to handwriting analysis.

The German school (L. Klages, M. Pulver) — focused on the rhythmic and spatial characteristics of writing.

The Italian school (G. Moretti, M. Marchesan) — created a methodology for analyzing handwriting based on precise measurements.

Graphological schools are generally divided as follows:

Analytical school — each sign (e.g., pressure, form, speed, slant) is analyzed separately, and each is linked to a psychological meaning.

Gestalt or holistic school — emphasizes the overall form and rhythm of the handwriting and draws conclusions from the overall image.

Combined approach — integrates analytical and holistic factors.

Handwriting is both a cognitive and a motor process. In children, the development of handwriting is related to the strengthening of finger and hand muscles, hand–eye coordination, internal rhythm, attention, and processing speed. Studies show that between the ages of 5 and 7, children’s letter forms, line stability, and pressure regulation improve significantly (a Frontiers study on graphomotor competence in preschool-age children).

Austrian psychologist Charlotte Bühler (1935) made a major contribution to the formation of children’s graphology by laying the groundwork for the systematic study of children’s handwriting. Helga Marx (1968) studied the ontogenesis of children’s handwriting in depth. In the modern period, Patricia Zigel (2015) has carried out important work in the field of digital graphology.

The ontogenesis and psychological characteristics of children’s handwriting change in step with developmental stages. They can be classified as follows:

Ages 6–8 — a sensorimotor stage characterized by the formation of motor skills, the simplicity of graphic representations, and large letter size. Arnold Gesell's (1940) research demonstrated that individual characteristics are already evident in children's handwriting at this age.

Ages 9–12 — the stage of concrete operational thinking, in which an individual style begins to form, letter shapes approach standard forms, and lines become more even. According to Jean Piaget's theory, the development of logical thinking at this stage affects the organizational features of handwriting.

Ages 13–18 — the stage of formal operational thinking, marked by the stabilization of handwriting, the formation of a personal style, and reflections of the level of social adjustment. Erik Erikson's identification process has a direct impact on handwriting.

Some elements of handwriting (for example, pressure, speed, slant, spacing between letters, line direction) are hypothesized to reflect children's internal emotional and cognitive states—such as level of attention, stress, and motivation. According to researchers, the psychological interpretation of handwriting features is analyzed as follows: pressure — strong pressure may indicate energy and determination, and in some cases nervousness or aggressiveness; weak pressure may indicate sensitivity or fatigue. Slant — rightward slant suggests openness and sociability; leftward slant suggests inwardness and protective mechanisms; upright writing indicates self-control and rationality. Letter size — large letters suggest extraversion and participation; small letters suggest introversion and attentiveness; extremely tiny writing may be a sign of lack of self-confidence. Unusual forms or altered letters may indicate stress or creativity; a line trending downward may reflect a depressive mood. However, these interpretations must always be checked against other methods. Changes in handwriting may be related not only to emotional states but also to physiological or environmental factors.

There are several diagnostic possibilities of graphological analysis, and the main diagnostic areas can be listed as follows:

In assessing cognitive development: the systematic nature of writing reflects logical thinking; the clarity of letters reflects the level of attention; the length and content of the text reflect memory.

In identifying emotional state: disorderliness and sharpness in writing indicate anxiety; dropping to the lower lines and weak pressure indicate depression; sharp angles and strong pressure indicate aggression.

In identifying personal characteristics: expansive writing and a rightward slant indicate sociability; upright writing and equal spacing indicate self-control; individual letter forms are a sign of creativity.

In Patricia Zigel's (2018) study, the accuracy of graphological analysis was shown to be in the range of 78–85%. Robert Bakman (2020) regards graphology as one of the most reliable methods among projective techniques.

Graphology can be applied in the following areas of child psychology:

Career guidance: helps choose a direction suited to the child's temperament;

Behavior analysis: an effective tool for identifying conditions such as stress, lack of self-confidence, or aggressiveness;

Therapeutic analysis: through graphotherapy, it is possible to influence the inner state by changing handwriting. For example, in the handwriting of children with ADHD, uneven pressure, incorrect letter forms, and variability in speed have been observed (Green et al., 2019).

From a practical standpoint, graphological analysis of a child's handwriting is very useful for identifying certain important conditions in pedagogical psychology. In particular, in determining learning ability (early diagnosis of dysgraphia, attention deficit syndrome, reading difficulties); in identifying communication problems (autism spectrum disorders, social phobia, self-regulation ability). Likewise, in clinical psychology, graphological analysis of a child's handwriting is of significant importance for the early detection of mental disorders (depression, anxiety disorders, self-harm behaviors) and for monitoring treatment effectiveness (tracking the course of therapy, assessing the effects of medication).

Graphological research advances theories that changes in a person's writing motor activity and nervous system are closely linked to psychological states; that "subjective signs" within handwriting reflect psychological condition; and that stable tendencies within handwriting may correspond to long-term personality traits. However, these theoretical claims are assessed by some critics as poorly substantiated scientifically. There are also those who consider graphology a "pseudo-scientific" field. According to some research findings, graphological diagnosis is indeed insufficient for psychological diagnostics; it should be used not as an independent diagnosis, but as supplementary information. For example, in examinations conducted by "Throckmorton" (OJP.gov) on 500 participants, the reliability of "personality

analysis" predictions made by graphologists was at the 50% level—that is, at random. In "A Twin Study of Graphology" (Cambridge, 2018), despite twins having similar handwriting, their personal characteristics differed. Systematic reviews have not confirmed graphology as a reliable tool for psychological diagnostics (PubMed ID: 37877571).

There are several methodological factors that substantiate the scientific limitations of graphology, which can be explained as follows:

Interrater and intrarater reliability: different graphologists may draw different conclusions from the same handwriting.

Low predictive validity: many studies have found weak correlations between psychological conclusions drawn from handwriting and test results (for example, the study by Dazzi and Pedrabissi).

Contamination and non-constancy factors: mental state, fatigue, limits of hand movement, lighting on the paper, type of pen, anger, stress—all of these affect handwriting.

Subjective interpretation: the meanings of signs may fall outside clear coding systems and vary depending on context.

For these reasons, most psychological scientists accept graphology not as an independent diagnostic tool, but as an auxiliary and experimental one.

However, in many studies conducted by scholars, it has been proven that graphology holds a significant place and importance in child psychology. Below are some of them:

1. "Handwriting in children with Attention Deficit Hyperactive Disorder: role of graphology" (BMC Pediatrics, 2019). The study compares the handwriting characteristics of children with and without ADHD (Attention Deficit Hyperactivity Disorder). The results show that certain graphological signs (such as irregular letter shapes, changes in direction, variations in line pressure, etc.) occur more frequently in the handwriting of children with ADHD. According to the findings, graphology can be used as a clinical auxiliary tool, especially in assessing domains such as motor control, consistency of hand movements, and handwriting quality.

2. "EMOTHAW: Emotional State Recognition from Handwriting."

This project attempts to link handwriting features (movement speed, pressure, timestamps, etc.) with states of stress, depression, and anxiety. Classifiers predicted emotional states with an accuracy of 60–71%. The results indicate that algorithmic analysis attempts to connect certain graphological features with abstract concepts through mathematical experimentation.

3. "Exploratory Investigation of Handwriting Disorders in School-Aged Children from First to Fifth Grade" (Children, 2023). This study examines handwriting-related disorders in school-aged children. It shows the importance of analyzing both the product and the process of writing (i.e., graphomotor aspects) in identifying diagnostic and support needs. The study emphasizes that early detection and intervention can improve children's handwriting and their success in the educational process.

4. "Graphomotor and Handwriting Disabilities Rating Scale (GHDRS)" (2024). This work proposes a new, largely objective, computer-assisted measurement scale for assessing graphomotor and handwriting disabilities. The scale includes 17 manifestations (from the perspective of the writing process/product) and is helpful in identifying children's handwriting problems. As a result, the degree of subjectivity in assessment decreases, and accuracy and errors are reduced. This may be convenient for educational and rehabilitation practice.

5. "The effects of handwriting experience on functional brain development in pre-literate children." Although not a long-term study, it shows that handwriting experience (drawing letters before learning to read) in young children may increase certain areas of neural activity in the brain. This helps develop psychological–neurobiological aspects such as handwriting motor skills and visuomotor integration.

6. "Evaluation of the Efficacy of Play Therapy among Children Undergoing Dental Procedure through Drawings Assessed by Graphological Method." To reduce stress during pediatric dental procedures, play therapy is applied; children are asked to draw pictures before and after the procedure, and these drawings are analyzed graphologically. As a result, stress-related signs in the drawings were found to decrease after play therapy. It was shown that graphological analysis can serve as an auxiliary tool in assessing stress and emotional state.

Research shows that graphology has significant importance in child psychology; however, it is advisable to use it together with other diagnostic methods. Combining graphology with other diagnostic tools—interviews, normative tests, and drawing/projective tests—can enrich the quality of analysis. A standardized coding system should be created for analysis. Graphological signs (pressure, slant, speed, spacing between letters, line direction) need to be defined with a clear, statistical coding system so that agreement (reliability) among different graphological interpreters

increases. It is necessary to advance the integration of digital and algorithmic methods. For example, using sensor pens and writing tablets to automatically measure writing trajectory, pressure, speed, and common motor features; and analyzing them with machine-learning methods (e.g., the EMOTHAW project). It is important to increase experimental and longitudinal studies—tracking children's handwriting and psychological state over time and analyzing changes, stages, and the influence of external factors. Interpretations should be made cautiously while adhering to ethical considerations. When presenting the results of graphology to the child or parents, one should proceed with care. Incorrect interpretations can lead to psychological pressure, stigma, or misdirection.

The latest scientific research on graphology is being carried out in the fields of digital graphology and neurographology. Digital graphology encompasses analysis via computer programs, evaluation using artificial intelligence, and the use of large databases; neurographology includes concepts such as the relationship between handwriting and brain activity, fMRI studies, and neurophysiological foundations. Graphology continues to develop into an important diagnostic tool in child psychology. The strengthening of theoretical foundations, the refinement of methodological approaches, and the expansion of practical applications are determining the prospects for the development of this field.

In child psychology, graphology can be used as an auxiliary tool when combined with reliable methods. In particular, if digital graphology and algorithmic handwriting analysis are developed, they will contribute to strengthening the scientific foundations of graphology. In the future, large-sample experiments with standard methodologies; comparisons of algorithmic, sensor-based handwriting analysis methods with psychological tests; experimental verification of graphology's importance in child psychology; AI-based handwriting analysis that measures trajectory, speed, and pressure via sensors; longitudinal studies that track changes in children's handwriting over time; meta-analyses that statistically synthesize all existing research on graphology; and new studies on the integration of graphology and neuropsychology may elevate graphology to a new stage and resolve methodological problems. On this basis, when graphology is analyzed in harmony with new technologies, conclusions become more precise and reliable.

In psychological diagnostics, the use of graphology should be based on trustworthy sources and empirical evidence rather than subjective opinions. Every handwriting analysis must be assessed in comparison with other diagnostic tools. A child's handwriting should be considered contextually, taking into account the child's developmental stage.

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