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Tomas Chamorro-Premuzic and Adrian Furnham
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PART 1

# Methods of personnel selection

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# 1 Early, unscientific methods

## 1.1 Introduction

Since the beginning of time, individuals have had to make 'people decisions': who to marry, to employ, to fight. In recent decades, sociobiology and evolutionary psychology have suggested that many of these apparently (quasi-logical) decisions are based on powerful people markers that we respond to, but are unaware that we are doing so. We assess people on a daily basis. There is, however, in every culture, a rich and interesting history of the techniques groups have favoured in making people decisions. Many of these techniques have quietly passed into history but others remain in use despite being rigorously tested and found wanting.

It appears that there have always been schools of thought with their ingenious methods that assess and reveal the 'true nature' of individuals, specifically their qualities, abilities, traits and motives. It is patently obvious that people are complex, capricious and quixotic. They are difficult to actually read, to understand and therefore to predict. Neither their virtues or values nor their potential for disaster are easily apparent. People are deceptive, both in the impression management and self-delusional sense. Some are self-aware: they know their strengths, limitations, even what really motivates them; they may even be able to report their condition. Many others are not.

Charlatans, snake-oil salesmen and their ilk find easy pickings among those who feel they need to evaluate or assess others for work purposes. The odd thing is that many of these disproved, pre-scientific, worthless and misleading systems still exist. They have advocates who still ply their trade despite lack of evidence that their systems actually work in the sense of providing reliable and valid assessments (see Section 2.6 and Figure 2.7 for an explanation of the technical meaning of 'reliability' and 'validity', which are the two main psychometric requirements that accurate instruments ought to fulfil). We shall consider some of these. These are essentially pre-scientific methods that pre-date the beginning of the twentieth century. Most have been thoroughly investigated and shown to be both unreliable and invalid. That is, there is ample evidence to suggest it is very unwise to use these methods in selection. However, they continue to be used. One reason for this is that scientific methods are often based on more common sense than these pre-scientific, counterintuitive approaches are. Ironically, counterintuitive methods and approaches have wider appeal than



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simple, logical methods. In that sense employers and companies are fooled by non-qualified consultants because, like Oscar Wilde, they 'believe anything as long as it is incredible'. Some of these discredited but still used methods are reviewed in this chapter.

This book attempts a comprehensive, critical and up-to-date review of the different methods used to assess people. It covers all the well-known and well-used techniques, looking at both theory and evidence for their usefulness, validity and efficacy. However, because it has been wisely pointed that that those who do not know their history are compelled to repeat it, we believe it important to look critically at some of the earlier, 'pre-scientific' methods which remain in use.

The interesting question is why some of these techniques remain in use despite the overwhelming evidence that they are invalid. French organisations still use graphological analysis of potential employees. Astrology is widely practised and almost every newspaper contains some sort of 'star readings', presumably because people consult them and act upon them. Whilst classic phrenology has almost completely disappeared, it has been argued that the current enthusiasm for PET and MSRI scanning is really no more than a form of electrical phrenology.

Over the years there have been two types of research investigation into earlier and largely discredited methods. The first has been attempts to investigate validity claims by examining concurrent, construct, discriminant, but mainly the *predictive* validity of these tests. Most of these investigations have shown that claims made by the methods are essentially false. The second topic of interest has essentially been why, if the technqieues are demonstrably invalid, do people continue to use them. We will review both of these research traditions in this chapter.

## 1.2 Graphology

Graphology is the study and analysis of handwriting, and has been used for centuries as an aid in personnel selection. The use of graphology is still prevalent in Europe, where estimates for the percentage of organisations using the technique range from 38 per cent (Shackleton & Newell, 1994) to 93 per cent (Bruchon-Schweitzer & Ferrieux, 1991). In the United States, graphology gained some acceptance in many corporate workplaces during the late 1980s and early 1990s (Davey, 1989; Edwards & Armitage, 1992). In Europe, the French lead the way in the use of graphologists (Furnham, 2004); this is in line with a strong psychodynamic tradition in France, particularly compared to the UK.

Part of the appeal of graphology is that people cannot supposedly fake their 'real' personality because they are unaware of how they project it. This assumption applies not only to graphology but also to psychodynamic techniques in general (e.g., projective tests and the currently in-vogue implicit association tests). The problem is that since interpretation is subjective, different 'raters' (even when they are clinical experts) end up making different interpretations, making

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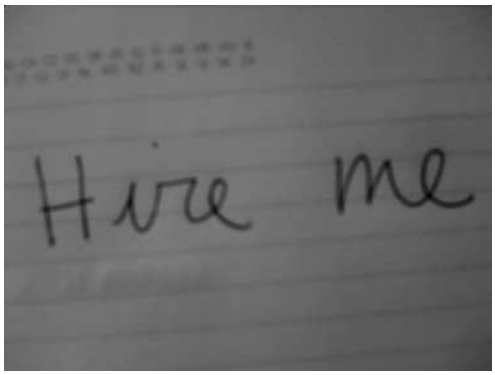



**Figure 1.1** *Graphology: what does this say about the candidate's motivation?*

graphology untestable at best, and unreliable at worst. There also appear to be different schools of psychology which interpret specific aspects of handwriting differently.

Although it is difficult to assess how many organisations currently use graphology – or when and why they use it – it does appear that hiring decisions regarding a large number of job applicants around the world are determined, in part at least, by handwriting. Some organisations are happy to boast of their usage of graphology, while others often keep it quiet for fear perhaps of ridicule or perhaps because they believe they have an efficient but hidden means to evaluate candidates' suitability.

Although studies of the relationship between handwriting and character or personality date back to the seventeenth century, it was not until the late nineteenth century that the foundations of modern graphology were laid by the French abbot Jean-Hippolyte Michon (1872). Michon claimed he was able to discern the particular features of handwriting that writers with similar personalities had in common. Thus he developed an inventory of about 100 graphological features or 'fixed signs', such as a particular way of crossing the *t* or dotting the *i*, which were associated with certain types of personality.

A few decades later, Jean Crepieux-Jamin (1909) further developed this research, and claimed to have found further associations between particular features of handwriting and personality traits. The result was additional features which, when analysed in combination, were believed to indicate different personality traits. Inevitably, however, this process of matching particular features of handwriting with particular types of personality began to produce conflicting results: the associations found by one graphologist would often contradict those found by others (Hartford, 1973). This remains the case today with different schools of thought emphasising the 'meaning' of particular letters. Interinterpreter reliability is nearly always unacceptably low. Further validity is preconditioned on reliability of 'diagnosis'. It is hard for unreliable measures to be valid.

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Table 1.1 *Two factors underlying graphological scoring (adapted from Furnham* et al.*, 2003)*

| | Dimensions | Details |
|---|---|---|
| Size of handwriting | .84 | |
| Width of handwriting | .84 | |
| Pressure of handwriting | .48 | |
| Slant of handwriting | .37 | |
| Use of bottom loops | .36 | |
| Crossed *t's* (quantity) | | .87 |
| T-crosses (type) | | .82 |
| I's dotted (quantity) | | .49 |
| Connectedness | | .40 |
| Percentage of page used | | .35 |

*Note:* Loadings <.35 not shown.

Later, the German school of graphology under Ludwig Klages (1917, 1930) took a different approach to the subject. This favoured a more intuitive, theoretical psychology of expressive behaviour. It is probably this approach to handwriting that has had the greatest influence, and Klages is held in high esteem by most contemporary graphologists (Lewinson, 1986).

Contemporary graphologists still use these 'insights' to determine personality characteristics of individuals through analysis of their handwriting. For example, a predominance of strokes to the right is said to indicate 'goal-directed' people, whereas a predominance of left movements indicates concern with the self. Other information about personality can be 'gleaned' from the interpretation of letter formation, zones representing different spheres of the human psyche and so on (for a review, see Greasley, 2000). Furnham, Chamorro-Premuzic and Callahan (2003) factor analysed fourteen graphological criteria and found they were reduced to two fundamental areas: *dimension* of writing (size, width, slant) and *details* (connections, loops, etc.) (see Table 1.1). However, these variables were unrelated to established (and validated) personality inventories.

Eysenck and Gudjonsson (1986) suggested that there appear to be two different basic approaches to the assessment of both handwriting and personality, namely holistic vs analytic. This gives four basic types of analysis. *Holistic analysis of handwriting*: this is basically impressionistic, because the graphologist, using his or her experience and insight, offers a general description of the kind of personality he or she believes the handwriting discloses. *Analytic analysis of handwriting*: this uses measurements of the constituents of the handwriting, such as slant, pressure, etc., which are then converted into personality assessment on the basis of a formula of code. *Holistic analysis of personality*: this is also impressionistic, and may be done after an interview, when a trained

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psychologist offers a personality description on the basis of his or her questions, observations and intuitions. *Analytical analysis of personality*: this involves the application of psychometrically assessed, reliable and valid personality tests (questionnaires, physiological responses to a person, and the various grade scores obtained).

This classification suggests quite different approaches to the evaluation of the validity of graphological analysis in the prediction of personality. Holistic matching is the impressionistic interpretation of writing matched with an impressionistic account of personality. Holistic correlation is the impressionistic interpretation of writing correlated with a quantitative assessment of personality, while analytic matching involves the measurement of the constituents of the handwriting matched with an impressionistic account of personality. Analytic correlation is the measurement of the constituents of handwriting correlated with a quantitative assessment of personality.

### 1.2.1 Scientific evidence for graphology

Early studies appeared to provide *some* support for this form of personality assessment (Allport & Vernon, 1933; Hull & Montgomery, 1919). Some more recent studies have also claimed to have found evidence that graphologists can recognise certain personality traits from handwriting samples (Linton, Epstein & Hartford, 1962; Nevo, 1988; Oosthuizen, 1990). There are also many articles in professional journals and serious newspapers advocating graphology through evidence involving personal experience (Lavell, 1994; Watson, 1993).

However, when studies are carefully selected in terms of their methodological veracity, then the evidence is *overwhelmingly negative* (Eysenck & Gudjonsson, 1986; Neter & Ben-Shakhar, 1989; Tett & Palmer, 1997).

Furnham (1988) listed the conclusions drawn from six studies conducted in the 1970s and 1980s:

(1) 'It was concluded that the analyst could not accurately predict personality from handwriting.' This was based on a study by Vestewig, Santee and Moss (1976) from Wright State University, who asked six handwriting experts to rate 48 specimens of handwriting on fifteen personal variables.
(2) 'No evidence was found for the validity of graphological signs.' This is from Lester, McLaughlin and Nosal (1977), who used sixteen graphological signs of Extraversion to try to predict from handwriting samples the Extraversion of 109 subjects whose personality test scores were known.
(3) 'Thus, the results did not support the claim that the three handwriting measures were valid indicators of Extraversion.' This is based on the study by Rosenthal and Lines (1978), who attempted to correlate three graphological indices with the Extraversion scores of 58 students.
(4) 'There is thus little support here for the validity of graphological analysis.' This was based on a study by Eysenck and Gudjonsson (1986), who employed

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a professional graphologist to analyse handwriting from 99 subjects and then fill out personality questionnaires as she thought would have been done by the respondents.

(5) 'The graphologist did not perform significantly better than a chance model.' This was the conclusion of Ben-Shakhar and colleagues (1986) at the Hebrew University, who asked graphologists to judge the profession, out of eight possibilities, of 40 successful professionals.

(6) 'Although the literature on the topic suffers from significant methodological negligence, the general trend of findings is to suggest that graphology is not a viable assessment method.' This conclusion comes from Klimoski and Rafael (1983), based at Ohio State University, after a careful review of the literature. Yet many of these studies could be criticised methodologically in terms of measurement of both personality and graphology.

Furnham and Gunter (1987) investigated the 'trait' method of graphology, which attempts to predict specific personality traits from individual features of handwriting. Participants completed the Eysenck Personality Questionnaire (EPQ) and copied a passage of test in their own handwriting. The writing samples were coded on thirteen handwriting-feature dimensions (size, slant and so on) that graphologists report to be diagnostic of personality traits. Only chance-level correlations were observed between writing features and EPQ scores. Similarly, Bayne and O'Neill (1988) asked graphologists to estimate people's Myers-Briggs type (Extravert–Introvert, Sensing–Intuition, Thinking–Feeling, Judging–Perceiving) from handwriting samples. Though highly confident in their judgements, none of the graphologists' appraisals accurately predicted the profile of the writers.

In a meta-analysis (a review of many studies in an area that provides a quantitative estimate of the average statistical relationship among the examined variables) of over 200 studies assessing the validity of graphological inferences, Dean (1992) found only a small effect size for inferring personality from handwriting and noted that the inclusion of studies with methodological shortcomings may have inflated the effect-size estimate. The liberal estimated effect size of 0.12 for inferring personality from neutral-content scripts (scripts with fixed content not under the control of the writer) is *not nearly large enough to be of any practical value* and would be too small to be perceptible. Thus, even a small, real effect cannot account for the magnitude of handwriting–personality relationships reported by graphologists.

Furthermore, gender, socioeconomic status and degree of literacy – all predictable from handwriting – may predict some personality traits. Thus, any weak ability of graphology to predict personality may be merely based on gender or socioeconomic status information assessed from handwriting. Graphological accuracy attributable to these variables is of dubious value because simpler, more reliable methods for assessing them are available.

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### 1.2.2 Graphology and job performance

Graphological assessments for personnel selection focus on desired traits such as determination, sales drive and honesty. Given its apparent lack of validity for predicting personality, it would be surprising if graphology proved to be a valid predictor of job performance. Indeed, the results of research investigating the validity of graphology for predicting job performance has generally been negative (Kravitz *et al*., 1996; Rafaeli & Klimoski, 1983).

Ben-Shakar and colleagues (1986) used two empirical studies to test the validity of graphological predictions. In one study, bank employees were rated by graphologists on several job-relevant traits. A linear model developed for the study outperformed the graphologists. In the second study, the professions of forty successful professionals were judged. The graphologists did not perform significantly better than a chance model. The results of both studies led to the conclusion that, when analysing spontaneously produced text, graphologists and non-graphologists *achieve similar validities*.

In a meta-analytic review of seventeen studies, Neter and Ben-Shakhar (1989) found that graphologists performed no better than did non-graphologists in predicting job performance. When handwriting samples were autobiographical, the two groups achieved modest accuracy in prediction. When the content of the scripts was neutral (that is, identical for all writers), neither group was able to draw valid inferences about job performance. Thus, belief in the validity of graphology, as it is currently used to predict job performance, *lacks empirical support*.

As a necessary condition for valid inference, the reliability of predictions based on graphology must first be established (Goldberg, 1986). However, reliability of graphological prediction has its own precondition: handwriting features must first be reliably encoded. This precondition appears to be met; the mean agreement between different judges measuring objective handwriting features (such as slant or slope) is high, and the mean agreement about subjective handwriting features (like rhythm) is still respectable (Dean, 1992).

But agreement about what these features signify is less impressive. In studies reviewed by Dean (1992), the mean agreement of interpretations made by graphologists was $r = 0.42$. Even lay judges exhibit some agreement in their naive interpretations, with a reliability ($r = 0.30$), only slightly lower than that of the graphologists. Measuring graphological features can be made reasonably precise. The error is in suggesting that graphology is systematically related to things like individual ability, motivation and personality. Further, the theory of how, when or why a person's abilities or personality shapes their handwriting (or indeed vice-versa) is unclear. How or why should handwriting as opposed to many other activities be such a good marker of personality? This obvious question is never answered.

Why, then, does graphology persist? Ben-Shakhar and colleagues (1986, p. 176) have pointed out that graphology 'seems to have the right kind of

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properties for reflecting personality'. Both personality and handwriting differ from person to person, and it might be expected that one offers insight into the other. Unlike other pseudosciences like astrology, graphology provides a sample of actual expressive behaviour from which to infer personality (Ben-Shakhar, 1989). That is, handwriting bears many features that graphologists use to predict personality, including characteristics that the writer would prefer not to disclose or perhaps is not even conscious of possessing.

Moreover, many of the purported relationships between handwriting and personality appear almost intuitive. For example, small handwriting is believed to imply modesty and large handwriting implies egotism. In many examples like this, the empirical relationships between handwriting features and personality traits identified by graphologists closely parallel *semantic associations* between words used to describe handwriting features (for example, *regular* rhythm) and personality traits (for example, *reliable*).

Research by Chapman and Chapman (1967) suggests that where semantic relationships such as these exist, the intuitive statistician may infer non-existent or illusory correlations in the direction dictated by semantic association. For example, Chapman and Chapman (1967) presented naive judges with a set of Draw-a-person (DAP) drawings, along with contrived symptom statements about the patient who provided the drawing. The DAP is a projective test in which patients are asked to draw a person, and from those drawings clinicians make inferences about their underlying psychopathology.

Chapman and Chapman (1967) found that, although symptom statements were uncorrelated with features of the drawing, naive participants perceived illusory correlations between the same semantically related pairs of drawing features and clinical symptoms that clinicians believed to be related. For example, like clinicians, naive participants perceived drawing a big head as correlated with concerns about intelligence and elaboration of the eyes as correlated with paranoia.

This has been confirmed by a careful study by King and Koehler (2000), who showed that illusory correlations in graphological evidence was rife. They also concluded that this *may partially account for continued use of graphology despite overwhelming evidence against its predictive validities* (p. 336).

This is an example of what is known as the 'confirmation bias' (Nickerson, 1998). When a person is inspecting some evidence in a search of systematic relationships, semantic association is likely to guide the formulation of hypotheses about what goes with what, producing a kind of expectation. Other potential relationships may not be considered and hence not detected even if they are consistent with the observed evidence.

In other words, graphology persists because when we examine evidence in the light of semantically determined hypotheses, ambiguous aspects of the evidence are interpreted in a manner consistent with the hypothesised relationship. Driver, Buckley and Frink (1996) asked 'should we write off graphology?' as a selection technique. Their answer was 'yes'. They note '*the overwhelming results of well-controlled empirical studies have been that the technique has not*

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*demonstrated acceptable validity . . . (and that) while the procedure may have an intuitive appeal, graphology should not be used in a selection context*' (p. 76).

Recent reviews of the literature have by and large supported previous reviews on the low validity of graphological analyses and their potential harm for personnel selection. This is true even for reviews that assessed evidence provided by graphological societies in different countries (Simner & Goffin, 2003).

## 1.3 Physiognomy and body build

Physiognomy is the study of inferring personal attributes, such as personality traits, through physical traits. In simple terms, this implies that a person's outer appearance (head and body shape) reflects their character or personality; thus body shape or facial features would reveal psychological aspects of the person (just like graphology is meant to do). For example, wider faces and levels of aggression are both positively affected by testosterone levels during puberty and would therefore co-vary (physiognomic readings are largely based on interpreting faces or the bony structure of the skull, on which soft tissues lie).

This belief has an exceptionally long history, dating back to ancient Greece. Both Aristotle and Plato made frequent reference to theories of this sort, and the ancient Greeks more generally believed that physical beauty was linked with moral goodness. Nor was this a particularly European phenomenon: examples of Chinese physiognomy show that this 'science' was practised in parts of Asia.

Most contemporary attempts at providing a scientific account for physiognomy can be dated back to the eighteenth century, when Johann Caspar Lavater published his *Essays on Physiognomy* (1775–8). Lavater's ideas on physiognomy, and in particular the divination of a person's character from his *facial* features, were based on the writings of the Italian Giambattista Della Porta, the French physiognomist Barthélemy Coclès, and the English philosopher and physician Sir Thomas Browne. For all three, it was possible to discern inner qualities of an individual from the outer appearance of his or her face: morphology reflects psychology. The idea was that a person's temperament influenced both his or her facial appearance and character, and it was thus possible to infer one from the other. Thus active people develop different body shapes than lazy people.

For example, Della Porta used woodcuts of animals to illustrate human characteristics, what Magli (1989) refers to as 'Zoological Physiognomics'. This element of physiognomy relied on a prior anthropomorphic physiognomy of a certain animal then being applied to humans (for example, representing someone as lion-like, or courageous). A related method for divining the character of a person during this period was that of metoposcopy, or the interpretation of

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