

# How Widespread is Graphology in Personnel Selection Practice?

## A case study of a job market myth

Adrian Bangerter\*, Cornelius J. König\*\*, Sandrine Blatti\*\*\*  
and Alexander Salvisberg\*\*\*\*

\* Institute of Work and Organizational Psychology, University of Neuchâtel, Neuchâtel, Switzerland.  
adrian.bangerter@unine.ch

\*\* Institute of Psychology, University of Zurich, Zurich, Switzerland

\*\*\* Adéquation SA, Chavannes-de-Bogis, Switzerland

\*\*\*\* Institute of Sociology, University of Zurich, Zurich, Switzerland

**Graphology is allegedly widely used in personnel selection in Europe. This is a myth: a widespread but false belief. We explored this myth in five studies. Study 1 established that job ads rarely require handwritten letters. Study 2 showed that handwritten letters serve multiple purposes but are seldom used for handwriting analysis. In Study 3, job market actors overestimated the frequency with which handwritten letters are subjected to graphological analysis. In Study 4, we showed experimentally that people expect graphology to be used when job ads require submission of a handwritten letter. Study 5 showed that advice books may transmit the myth. The myth may foster tolerant attitudes toward graphology, thereby facilitating its persistence in selection practice.**

### 1. Introduction

In the face of a sustained and significant gap between scientific research and organizational practice, organizational researchers are becoming increasingly interested in understanding what factors determine success in the marketplace of ideas (Heath, Bell, & Sternberg, 2001; Pfeffer, 2007). The gap is particularly worrying in the area of personnel selection. Beliefs of human resource professionals about best practices are often inconsistent with research findings (Rynes, Colbert, & Brown, 2002), with the result that empirical validity is only one factor affecting which selection procedures are used by organizations. Other factors include institutional forces acting against change (Klehe, 2004), political processes (Dipboye, 1994) and attitudes and beliefs of individual recruiters (Lievens & De Paepe,

2004). In this article, we explore another factor, the existence of *myths* about selection practices.

Myths are obsolete, entrenched beliefs that persist in individuals' minds and in mass media. Originally based on facts, their content has become changed through repeated retellings to the extent that they no longer accurately depict states of affairs. They can have significant and negative effects on individual and collective behavior. We document the case of a myth about selection practices, the *myth of graphology*. It is composed of two interrelated beliefs: (1) that graphology is a frequently used and valued selection method in European countries, and (2) that when a handwritten application letter is required in a job advertisement, analysis of the applicant's handwriting is likely.

Expectations or behavior predicated on false beliefs like the myth of graphology can lead both organizations

and applicants to suboptimal outcomes in the selection process. Organizations that require handwritten application letters may invite unwarranted inferences about the nature of their selection procedures (e.g., that they use graphology as a selection method). And applicants that prepare their application under such assumptions may waste time and effort. But perhaps most importantly, widespread false beliefs that graphology is often used may even facilitate the persistence of this invalid method in practice, by fostering tolerant attitudes toward it.

Here we show that (1) the mass media convey the beliefs that graphology is widely used and that handwritten letters are an indicator of it, (2) job market actors believe that handwritten application letters are used for handwriting analysis, but (3) handwritten application letters are rarely required in job ads and even more rarely subjected to handwriting analysis. We start by describing general aspects of myths before describing the myth of graphology and our studies.

## 2. The emergence, persistence and effects of myths

Myths are collective beliefs that are false (e.g., Harzing, 1995; Hines, 1987). They emerge and spread in communication, through two main channels: mass media and interpersonal conversations. Although myths may have a 'kernel of truth' or originate from authoritative epistemic sources (e.g., scientific findings), transmission processes like repeated retelling of stories (Devoe & Heath, 2006; Gilovich, 1987) or media reporting (Bailis & MacCoun, 1996; Bangerter & Heath, 2004) transform or distort their content, often making them more extreme.

Distorted depictions of states of affairs may emerge because extreme information is more surprising or interesting in social exchanges (Rosnow & Fine, 1976; in the case of mass media, it may also help to sell books or newspapers). Although strategic goals may sometimes motivate distortion, content often gets transformed toward more extreme versions through overgeneralization or shifts in meaning through decontextualization and recontextualization (Best, 2001). Sometimes, mimetic processes may encourage the spread of beliefs, especially in situations of uncertainty or when a technology is poorly understood (DiMaggio & Powell, 1983). Beliefs may even take on a 'life of their own' (Best, 2001, p. 87), continuing to persist and circulate (sometimes for years) despite having become completely dissociated from the original facts. In such cases, we speak of a myth or an urban legend (Brunvand, 1981).

Beliefs lead to expectancies, which in turn guide action (Olson, Roese, & Zanna, 1996). Collective beliefs thus motivate, direct and coordinate collective action. If the beliefs are false, misdirection of efforts may occur.

Studies have suggested deleterious effects of myths in management practices. For example, erroneous implications drawn from popularized results of split-brain research (e.g., left-brain people are better managers, right-brain people are better designers) have led to massive misdirection of funds in training, selection, and human resource management (Hines, 1987). Another example is Harzing (1995), who found that high failure rates cited in almost all of the literature on expatriate assignments are largely spurious and due to repeated misquotations. The myth can lead to excessive focus on premature recall to the detriment of other aspects of expatriate performance. Myths also emerge in science. For example, cross-sectional studies are often automatically viewed as suffering from common method variance. Spector (2006) described this belief as an urban legend that is detrimental to collective scientific practice. Despite these examples of myths in organizational practice and research, we are not aware of studies of myths in personnel selection.

## 3. The myth of graphology

Graphology is not a valid selection method (Neter & Ben-Shakhar, 1989). But it is unique among selection methods in the conflicting attitudes and misconceptions it elicits in commentators as well as the aura of mystery surrounding its prevalence (Driver, Buckley, & Frink, 1996; Greasley, 2000). The reasons why people believe in the validity of graphology have been explored in some detail (Dean, Kelly, Saklofske, & Furnham, 1992). Below, we describe two widely held beliefs about the prevalence of graphology. We refer to these as a myth of graphology, before discussing their potential effects on selection practice. These beliefs are *motifs*, i.e. thematic elements that constitute the core of urban legends (Brunvand, 1981). The first belief is that graphology is often used in selection. The second is that requirements to submit handwritten application letters in job ads mean that graphology is used to select applicants.

### 3.1. How prevalent is graphology as a selection method?

It is difficult to determine the prevalence of graphology in selection. Surveys of organizations indicate that it is rarely used outside of France (where estimates vary between 38% and 93% of organizations, Bruchon-Schweitzer & Ferrieux, 1991; Shackleton & Newell, 1994). More recent surveys of applicants in Italy, Greece, and the Netherlands (Anderson & Witvliet, 2008; Bertolino & Steiner, 2007; Nikolaou & Judge, 2007) show that <10% have encountered graphology in selection.

Despite these figures, many articles, both in scientific and practitioner journals and newspapers, report extreme accounts of (1) the numerical prevalence of graphology and (2) the countries it is used in. An example is the following, from a British newspaper: 'In France, Germany and Holland, about 80 per cent of companies use graphology as part of their selection process, although it is less common in the United Kingdom' (*The Independent*, February 12, 2005). Levy (1979) is often quoted as an empirical source. In that source, the exact text of the mention (p. 72) is 'In Europe, where it was developed, graphology is routinely used as a hiring tool by an estimated 85% of all companies.' No data back up this assertion. Thus, a reference treated by many articles as a primary data source is also unsubstantiated. Interestingly, the 85% figure also appears in scientific articles (e.g., Neter & Ben-Shakhar, 1989; Schmidt & Hunter, 1998).

Media assertions are often based on overgeneralizations of non-representative survey data. For example, Zaugg (1996) surveyed a sample of members of the Swiss Society for Personnel Management, reporting that 68% of respondents had used graphology. In 2004, a newspaper wrote that '70% of Swiss companies' use graphology as a selection method (*Le Temps*, May 7, 2004). The article failed to consider the non-representative nature of the sample or the possibility that the figure was outdated. In contrast, more recent data (König, Klehe, Berchtold, & Kleinmann, 2007) found that only 15.8% of Swiss recruiters surveyed had used graphology in the past 18 months. Extreme figures lead commentators to infer that graphology plays an important role in selection. For example, Greasley (2000, p. 44) wrote that 'graphology is clearly a serious business affecting the employment prospects of thousands, perhaps millions of candidates annually.'<sup>1</sup>

The similarity of the figures above and their persistence over time raise suspicions as to whether they may simply be false. Indeed, the very idea that a majority of organizations in an economy as large as Europe routinely uses graphology in selection is implausible when one imagines the legions of graphologists that would be needed to deal with such a high demand.

### 3.2. What are handwritten application letters used for?

The second component of the myth of graphology is the idea that job advertisements requiring handwritten letters are a sure sign that graphology is used in the selection process. Many media link handwritten application letters to the use of graphology. For example, a French web site asserts that when a job posting requires a handwritten letter, 'a graphological analysis

is done 99% of the time' (<http://www.chez.com/recrutement/graphologi.htm>, our translation). And an international web site specialized in labor mobility writes that 'application letters to French companies should be hand-written [...] as graphology is a wide-used [sic] selection method' (<http://www.labourmobility.com/individuals/jobhuntingabroad/index.php#france>).

We have also encountered this belief in informal contacts with human resource professionals, journalists, and students. It is related to the previous component of the myth: if graphology is indeed widespread, there is a substantial risk that one's application will be analyzed using it, and thus the requirement for a handwritten application letter in a job ad seems to be a good sign of it. This belief may have emerged because applicants are motivated to find out what selection procedures they are likely to undergo and may draw inferences from job ads.

### 3.3. Negative effects of the myth of graphology

The myth of graphology may contribute to the acceptance (and thus the persistence) of graphology as a selection method by fostering exaggerated perceptions of its prevalence. In social psychology, the phenomenon of *pluralistic ignorance* (Prentice & Miller, 1996) refers to a situation where the prevalence of a social norm is overestimated on the basis of observation of other people's behavior. In a similar vein, observing extreme assertions in the media about the prevalence of graphology as a selection method and about the link between handwritten letters and graphology may lead job market actors (applicants and recruiters) to overestimate its prevalence, and thus to become more tolerant of its use. The fact that respondents exhibit more favorable attitudes toward graphology in France (where graphology is rather prevalent) than in the United States (where it is not) is consistent with this argument (Steiner & Gilliland, 1996). Several other studies (e.g., Bertolino & Steiner, 2007; Nikolaou & Judge, 2007; Phillips & Gully, 2002) also report high correlations between respondents' perceptions of how widespread a selection technique is and how favorably they perceive it.

The myth of graphology may also affect applicants' perceptions of organizations and their behavior during the selection process. Organizations that require handwritten application letters may invite unwarranted (and potentially undesired) inferences about the nature of their selection procedures (e.g., that they regularly use graphology as a selection tool). This may have negative effects on how applicants perceive the organization (e.g., that its selection process lacks professionalism). Furthermore, applicants that prepare their application under such assumptions may waste time and effort.

Thus, the myth of graphology may affect the beliefs and behavior of various job market actors. It is therefore important to assess evidence relative to it.

#### 4. The present studies

We explored the myth in five empirical studies. Our research is contextualized in the Swiss job market, which is allegedly characterized by a high prevalence of graphology in personnel selection (Leonard, 1999). We asked two main research questions: (1) Is there evidence that graphology is an important selection method in Swiss companies? (2) Do job market actors (recruiters and applicants) believe that handwritten letters are an indicator of graphology? Applying the assumption that handwritten letters are potential indicators of the importance of graphology in selection, we determined how often such letters are required in selection procedures by searching job advertisements (Study 1). We then investigated the link between handwritten letters and graphology by asking recruiters that use them what they use them for (Study 2). In Study 3, we surveyed recruiters that do not use handwritten application letters and university students about their beliefs as to their purpose. In Study 4, we studied the effects of instructions to submit a handwritten application letter in a fictitious job advertisement. In Study 5, we content-analyzed advice books about application letters to investigate whether they transmit graphology-related content and thus constitute potential vectors of the myth.

#### 5. Study 1: the prevalence of handwritten letters in job ads

If, as suggested by the myth, graphology is often used by Swiss companies and handwritten application letters are a reliable indicator of graphology use, then it follows that handwritten letters should be frequently required in the selection process. In other words, even if the prevalence of graphology is difficult to measure directly (other than by using large-scale self-report surveys, which are costly, limited in generalizability, and prone to obsolescence), it should be related to the frequency with which handwritten letters are used in personnel selection. One way to estimate the prevalence of handwritten letters in personnel selection is to search job advertisements for requirements to submit such documents. Study 1 therefore investigated the proportion of Swiss job ads that require handwritten application letters.

Of course, this proportion may not be a perfect indicator of graphology use by organizations. On the one hand, it may *underestimate* the frequency of

graphology, because even if a handwritten letter is not required in a job ad, organizations may try to get samples of applicants' handwriting at a later stage in the selection process. But on the other hand, the frequency of handwritten letters measured in job ads may *overestimate* the frequency of graphology, because, the second component of the myth notwithstanding, not all handwritten letters need indicate that graphology is used in a given selection process. For example, it is entirely possible that handwritten letters are used for purposes other than handwriting analysis. In any case, however, the requirement to submit a handwritten letter will probably reflect the importance placed on this facet of an applicant's file by the organization. Previous research (Aguinis, Michaelis & Jones, 2005) has argued that inclusion of requirements for certification in job ads for HR professionals signals the importance of certification in the selection process, although the non-inclusion of such requirements does not mean that certification does not matter. Likewise, requirements to submit handwritten letters in job ads may signal the importance placed on this criterion, but do not necessarily mean that graphology is not used at all.

##### 5.1. Method

We analyzed the prevalence of requests for handwritten letters in a Swiss job ad database (Sacchi, Salvisberg, & Buchmann, 2005). It comprises 30,000 ads with a total of 45,000 vacancies, constituting a representative sample of ads published in German-speaking Swiss newspapers from 1950 to 2007. The text of the ads is sorted into different units of analysis (i.e., sections with details about the company, the vacant position, required qualifications, and application instructions). We performed an automatic search of the section containing details about application instructions. Nineteen German words or word combinations that express the requirement to send a handwritten letter were used (e.g., 'handwritten,' 'handwriting sample').

##### 5.2. Results and discussion

Results (percentage of vacancies requesting handwritten letters) are shown in Figure 1. Data points represent 3-year moving averages (the year indicated, the previous year and the following year) to smooth out short-term fluctuations. Handwritten letters are rarely required at an average of 2.7% of vacancies ( $SD = 2.2$ ). Furthermore, this percentage decreases over time. A significant negative trend was documented by regressing the percentage on the year ( $b = -.096$ ,  $p < .001$ ,  $R^2 = .525$ ). From 2000 onwards, <1% of vacancies require a handwritten letter.

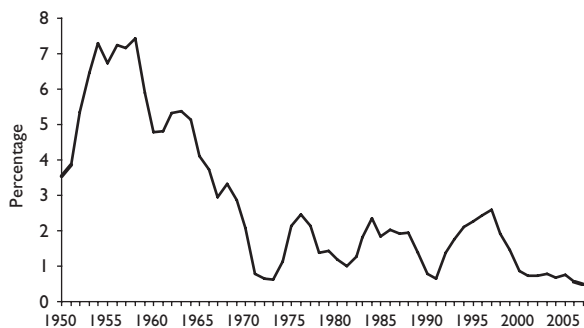


Figure 1. Percentage of job ads in German-speaking Swiss newspapers from 1950 to 2007 that require handwritten application letters.

We interpret these results as evidence that graphology is neither widespread in Switzerland, nor an important selection method.<sup>2</sup> Indeed, it seems extremely unlikely that a majority of Swiss companies use graphology as a critical selection method without this use being reflected in a high rate of job ads requiring handwritten letters. It seems that our job ad measure has convergent validity: König *et al.* (2007) found that only 15.8% of a (non-representative) sample of Swiss recruiters professed to having used graphology in the past 18 months. Indeed, that percentage probably translates into a lower percentage of *vacancies per year* (the measure we computed) for which graphology is used, because organizations may advertise for several vacancies in an 18-month period, and may not use graphology each time. Nevertheless, we cannot exclude the possibility that not all cases where graphology is used will be reflected in job ads, and thus our measure probably is not entirely accurate, and may potentially underestimate the prevalence of graphology. However, even though the relationship between mention of handwritten letters in job ads and graphology use is, like all predictor–criterion relationships, imperfectly correlated, the advantage of Study 1 is that it is based on a representative sample of ads for a period of 50 years. In Study 2, we explore the possibility that even when a handwritten letter is required, it may not be an indicator that graphology is used.

## 6. Study 2: how recruiters use handwritten application letters

The second component of the myth is the belief that handwritten application letters are systematically subjected to graphological analysis. It makes the myth tangible for many applicants who might otherwise not feel overly concerned about the alleged high prevalence of graphology in selection practice, because in submitting a handwritten letter along with their application, they are confronted with the concrete possibility that their handwriting might be analyzed. As shown above,

there are numerous assertions of the link between handwritten letters and graphology. However, there is no data to support this link. We therefore interviewed a sample of recruiters that use handwritten letters about what they use them for.

Pilot interviews with other recruiters suggested that handwritten letters serve several purposes. First, some recruiters professed using them as a filter, hoping that the extra effort involved would discourage unmotivated individuals from applying. Second, some recruiters use them as an initial screening tool (e.g., screening out letters with coffee stains or too many visible erasures). Third, some recruiters use them to gain a first impression of applicants (e.g., whether they have understood the application instructions). Fourth, some do use them for handwriting analysis, either by sending them to a graphologist or analyzing them themselves. In Study 2, we measured the percentage of recruiters professing to use handwritten letters for each of these purposes. Of course, selection instruments often serve multiple purposes simultaneously (e.g., Lévy-Leboyer, 1990), and thus recruiters may have more than one use for handwritten letters.

### 6.1. Method

#### 6.1.1. Sample

The sample comprised 63 recruiters (62% men, average age 47.4 years, average tenure in their organizations 10.3 years). Mean organizational size was 124, but the distribution was right-skewed: median size was 42. This is typical of the Swiss economy, in which over 99% of companies are small and medium enterprises (Schoenenberger & Zarin-Nejadan, 2005).

#### 6.1.2. Procedure

Recruiters were located through job ads in a prominent Swiss French-language newspaper requiring applicants to submit a handwritten letter. We used the contact information in the advertisement to solicit telephone interviews with them (response rate: 85%).

#### 6.1.3. Measures

Recruiters were asked whether they always required handwritten letters. Those that didn't were asked when they required them, answering *yes* or *no* to the following options: depending on the job type, on the hierarchical level of the job, on the department, on the economic situation, and on other circumstances. We also asked them to indicate the origin of the practice by answering *yes* or *no* to the following options: themselves, their predecessor, their boss, the organization, and 'don't know.' Finally, they were asked for what purposes they used handwritten letters, answering (*yes* or *no*) whether they used them to (1) discourage

unmotivated applicants, (2) get an additional document to screen applicants, (3) get a first impression of applicants, (4) interpret handwriting.

## 6.2. Results and discussion

Results are shown in Table 1. Several findings are noteworthy. First, for recruiters who do not always require handwritten letters, the most important factor that determines whether they do is job type. Second, the practice seems to originate in the personal preferences of individual recruiters, be it the respondents themselves, their bosses or their predecessors. Respondents indicated their organization as the origin of the practice only 25.4% of the time. This contradicts the myth, which systematically attributes the practice to a majority of organizations. Third, recruiters use handwritten application letters for many different purposes: 77.6% use them to get a first impression of applicants, 56.9% use them for screening, 43.1% use them to discourage unmotivated applicants, but only 22.2% use them to interpret handwriting.<sup>3</sup> The results show that the link between handwritten letters and graphology is tenuous at best. Media assertions that handwritten letters are a sure sign that graphology will be used in the selection process are exaggerated, and like other myths, focus on one particular use while obscuring others.

## 7. Study 3: beliefs of job market actors about the use of handwritten letters

As a next step, we investigated the beliefs of other job market actors. Our hypothesis was that, given the link

Table 1. Recruiters' ( $N = 63$ ) answers to Study 2 questions

	Frequency yes (percentage of total)
Always require handwritten letters	45 (71.4%)
If not ( $n = 18$ ), require them depending on:	
Job type	13 (20.6%)
Hierarchical level of job	6 (9.5%)
Department	4 (6.3%)
Economic situation	0
Other	3 (4.8%)
Origin of practice	
Recruiter	28 (44.4%)
Predecessor	14 (22.2%)
Boss	17 (27.0%)
Organization	16 (25.4%)
Don't know	3 (4.8%)
Purpose of handwritten letters	
Discourage unmotivated applicants	25 (43.1%)
Get additional document to make a first selection	33 (56.9%)
Get a first impression of applicants	45 (77.6%)
Analyze handwriting	14 (22.2%)

between handwritten letters and graphology in the advice literature, job market actors would overestimate the degree to which handwritten letters are subjected to graphological analysis. We first established what job market actors believe handwritten letters are used for. Then, we compared their beliefs to the actual practices of recruiters in Study 2 who use handwritten letters as part of their selection process (referred to as *users* in what follows).

To establish beliefs of job market actors, we sampled from two populations. First, we surveyed advanced university students, because they will be on the job market in the near future and thus potentially concerned by the issue of writing application letters. Second, we approached recruiters who do not use handwritten application letters (referred to as *non-users* in what follows). In comparing these two populations, it is also possible to ascertain whether their estimates differ from each other. Recruiters may have different beliefs than students; after all, many are professionals and likely experts in selection practices. But many recruiters, especially in smaller organizations, may not have much opportunity to observe what methods their colleagues use. Thus, they may also rely on indirect sources such as mass media to inform their beliefs. If so, one would expect estimates of recruiters and students to be similar.

We compared non-users' and students' beliefs with actual practices of users from Study 2. Users and non-users potentially constitute two different populations of recruiters. We thus systematically compared demographics in these two samples.

### 7.1. Method

#### 7.1.1. Samples

The student sample comprised 92 students of French-speaking universities in Switzerland (38% men, average age 26). Their average cumulative years of study was 3.4. The sample of non-users comprised 80 recruiters. Thirteen non-users had previously used handwritten application letters as a selection method in their current organization. We excluded them in order to keep the non-user sample homogenous. Non-users did not differ from users in Study 2 in gender distribution, 49.3% vs 62% men respectively,  $\chi^2(1, N = 129) = 2.43$ , NS, or age, 53.1 vs 47.4 years respectively,  $t(126) = .41$ , NS. However, non-users had lower average tenure in their organizations than users, 6.6 vs 10.3 years, respectively,  $t(126) = 2.52$ ,  $p = .013$ . Finally, we checked whether the two samples differed in terms of the size of the organizations that used them. Again, size distributions were right-skewed in the non-user sample. Mean size was 226.4 for non-users and 124.1 for users,  $t(84.1) = 1.45$ , NS. Median size was 46 for non-users and 42.5 for users, Mann-Whitney  $U = 1951$ , NS.

### 7.1.2. Procedure

Students filled out the survey during lectures. Non-user recruiters were located through job ads in a prominent Swiss French-language newspaper that did not mention handwritten letters. We used the contact information in the advertisement to solicit telephone interviews with a randomly selected subsample of them. Response rates were lower than for users [85% vs 70%],  $\chi^2(1, N = 188) = 5.51, p = .023$ .

### 7.1.3. Measures

Respondents indicated their opinion (yes or no) as to whether handwritten application letters were used by organizations to (1) discourage unmotivated candidates, (2) get an additional document to screen applicants, (3) get a first impression of applicants, (4) interpret handwriting. The percentages of yes answers were compared with those of users from Study 2.

## 7.2. Results

The percentages of yes answers to the four possible uses of handwritten letters are shown in Figure 2 for users, students and non-users. We first compared the percentage of students and non-user recruiters that answered 'yes' to each possible use. For 'get a first impression,' 'screening,' and 'discourage unmotivated applicants,' these percentages were not significantly different,  $\chi^2(1, N = 158) = .012$ ,  $\chi^2(1, N = 158) = 0$ , and  $\chi^2(1, N = 159) = 2.53$  respectively, all NS. However, for 'interpret handwriting,' the percentage of non-user recruiters answering 'yes' was significantly higher than the percentage of students,  $\chi^2(1, N = 159) = 4.9$ ,  $p = .032$ . Thus, more non-users than students believe that handwritten letters are used to interpret handwriting.

The critical question is how accurate students and non-users are in their answers, if compared with users.

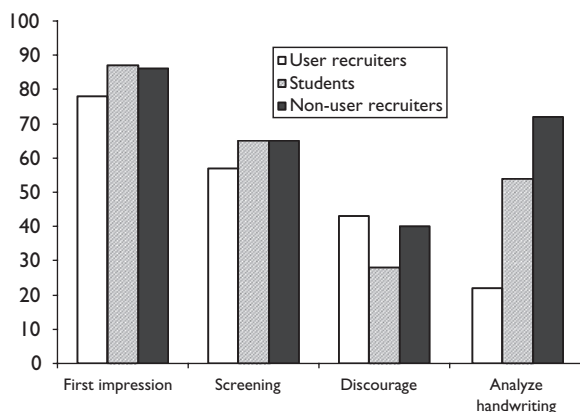


Figure 2. Percentage of 'yes' responses to questions about the uses of handwritten letters in users (Study 2), non-users and students (Study 3).

Thus, we compared their responses with the percentage of users from Study 2 that answered 'yes' to the same questions (relative to their own practice). For 'get a first impression,' 'screening,' and 'discourage unmotivated applicants,' the percentages of students and non-user recruiters answering 'yes' are similar to the percentage of user recruiters actually endorsing these uses. Indeed, for all three of these uses, there are no significant differences between percentages from the three samples,  $\chi^2(2, N = 216) = 2.67$ ,  $\chi^2(2, N = 216) = 1.25$ , and  $\chi^2(2, N = 217) = 4.2$ , for 'get a first impression,' 'screening' and 'discourage unmotivated applicants' respectively, all NS. However, the actual percentage of users in Study 2 that use handwritten letters for interpreting handwriting was 22.2%, whereas 54.3% of students and 71.6% of non-user recruiters opined that this was a use of handwritten letters. There is a significant difference between samples,  $\chi^2(2, N = 222) = 36.7, p < .0001$ . Therefore, more students and non-users tend to think that handwritten letters are used to interpret handwriting than what is actually practiced by users.

## 7.3. Discussion

In this study, we sought to determine whether job market actors overestimate the degree to which handwritten application letters are subjected to graphological analysis. We compared beliefs and actual practices about the potential purposes of handwritten application letters in students, non-users, and users (from Study 2). Results show that many students and non-users believe that handwritten letters are used to interpret handwriting. More non-users believe this than students. The number of non-users and students that believe this is higher than the number of users that are actually interested in handwriting analysis. This is a very specific misjudgement, as students and non-users are rather accurate in their answers about other purposes. Thus, it seems unlikely that the results can be attributed to general ignorance about recruiter practices. It seems more likely to conclude that students and non-users subscribe to the second component of the myth, i.e. that handwritten application letters are used to interpret applicants' handwriting.

The fact that very few users use handwritten letters to interpret handwriting, but that many non-users and potential applicants believe they do, is a finding analogous to pluralistic ignorance (Prentice & Miller, 1996). Research on pluralistic ignorance has shown how misperception of a social norm can lead individuals to unwittingly perpetuate that norm. Similarly, beliefs that graphology is widespread and that handwritten letters are indicators of graphology may help facilitate the persistence of graphology as a selection practice by

fostering more tolerant attitudes toward its use. They may also affect applicants' expectations and behavior in hiring situations.

## 8. Study 4: expectancies about the use of graphology from job Ads

Study 3 has produced evidence that many soon-to-be-graduated students and non-users tend to overestimate the frequency with which handwritten letters are used to analyze handwriting. But it is important to demonstrate that people also link handwritten letters and graphology in situations that are closer to real hiring situations than a survey. We therefore tested whether people use job ad information to generate expectancies (Olson *et al.*, 1996) about the use of graphology in a selection process. To do so, we conducted an experiment in which we had people read a fictitious job ad and evaluate the likelihood that various selection methods would be used. Such a situation is realistic because people scan employment ads independently of whether they are currently looking for a job or not, as a means of collecting information about the job market (Rafaeli, 2006). We manipulated whether a handwritten application letter was requested or not. Our hypothesis was that requests for a handwritten letter would increase the expectancy that graphology would be used in the selection procedure.

### 8.1. Method

#### 8.1.1. Participants

Participants were 131 students (81 women) of a university in French-speaking Switzerland. Seventy-nine studied law, 18 political science, and the rest various other subjects. Most (79.4%) were in their fourth year of study. Mean age was 24.5 years ( $SD = 3.3$ ). Some participants were already looking for jobs (9.9%) and many were about to start (6.1% in the next weeks, 44.3% in the next months and 22.1% in the next year).

#### 8.1.2. Procedure

Participants filled out a questionnaire during lectures. None of the authors were involved in teaching these lectures. First, they read a job ad that was presented as an anonymous version of an ad that had previously appeared in a major French-speaking Swiss newspaper. The features of the ad were constructed to appeal to students, for example, it stated that a large company was looking for junior consultants, that a relevant degree was required, that the applicant should be familiar with standard computer programs, that the company offered a stimulating work environ-

ment, flexible hours, a competitive salary, benefits, and so on.

The last sentence in the ad was about the documents the company required from applicants. We manipulated whether a handwritten application letter was required (the *experimental* group,  $n = 42$ ), whether an application letter was required without any indications whether it had to be handwritten (the *application letter* control group,  $n = 44$ ), or whether an application letter was not mentioned at all (the *no indications* control group,  $n = 45$ ). We included two control groups for a more subtle test of participants' inferences. If the experimental group differs from both control groups in their expectations that graphology will be used, then we can be sure participants are attentive to the specific requirement to submit a *handwritten* letter. Participants were randomly assigned to the three groups. A curriculum vitae 'as well as the usual documents' were required in all conditions, too.

Next, participants estimated the likelihood that five selection procedures would be used (personality tests, reference checks, graphology, interviews and assessment centers) in the selection process for the job. They answered on a five-point Likert scale (1 = *not at all likely* to 5 = *very likely*). The dependent variable was their estimation of the likelihood that graphology would be used. The other procedures were included to camouflage our interest in graphology and thus avoid demand characteristics. After this, participants responded to a manipulation check, indicating which description of the application instruction conditions they had read. We excluded those who failed the check from analysis. However, including them does not change the results.

### 8.2. Results and discussion

Manipulating whether a handwritten letter is required increased the perceived likelihood that a graphological analysis will be conducted. As expected, a one-way ANOVA showed a significant main effect for group,  $F(2,105) = 14.1$ ,  $p < .0001$ . *Post hoc* Scheffé tests revealed that the difference between the *experimental* group ( $M = 3.5$ ,  $SD = 1.03$ ) and the *application letter* control group ( $M = 2.21$ ,  $SD = .96$ ) was significant ( $p < .0001$ ) as well the difference between the *experimental* group and the *no indications* control group ( $M = 2.39$ ,  $SD = 1.04$ ,  $p < .0001$ ), but not between the two control groups ( $p = .74$ ).

Results thus show that job ads requiring handwritten application letters lead people to expect graphology to be used in the selection procedure. Thus, the second component of the myth of graphology is not just an abstract belief about handwritten letters, but influences processing of application-related information.



## 9. Study 5: graphology in the advice literature

A question that has not yet been addressed is how the myth gets transmitted. Above, we distinguished between two main sources of myths and urban legends, namely interpersonal conversations and mass media. One type of mass media information in the present case is advice on how to prepare for the hiring process, e.g. how to write an application letter or answer common interview questions. This information is diffused through books, newspapers and the internet. There is reason to believe that such sources may be inaccurate. Many of the authors of these books do not base their advice (e.g., what the best answer to a particular interview question is) on comprehensive surveys of what recruiters and organizations actually do. Thus, their advice may become obsolete if not revised over time. Moreover, through diffusion, it may spread beyond the particular context for which it is valid. For example, in the case of graphology, advice written for the French job market may be generalized by Swiss readers to the Swiss job market. Thus, the advice literature may possibly constitute one vector of the myth.

Accordingly, in Study 5, our objective was to explore what information, if any, about the myth of graphology is conveyed by the advice literature. We sought to ascertain the proportion of books on application letters accessible to Swiss job market actors that mention graphology, especially the two components of the myth. We sampled books available in libraries of universities and other institutions of higher education in French-speaking Switzerland. Many of these books are stocked by libraries as a counselling service to students. They are likely to be widely read by students about to enter the job market.

### 9.1. Method

We searched for books on how to write an application letter by using relevant key words in the database of the Library Network of Western Switzerland, which links libraries of all four French-speaking Swiss universities as well as other institutions of higher education. The search returned 52 hits. Sometimes, a book was represented more than once. Moreover, there were often several editions of some books. A new edition features, at least in theory, adapted content and thus represents an editorial decision to change that content. Therefore, if a book was re-edited, we ordered the first and the last editions available. We ordered one copy of each book that was not re-edited. We thus ordered 39 books. Three were missing and one was impossible to order, which left us with a final sample of 35 books. Year

of publication ranged from 1992 to 2006. The vast majority of books were published in France.

For each book, we manually coded mentions of graphology (words like *graphology* or *handwriting analysis*) on the front and back cover, in the table of contents, and in the text. Furthermore, based on a preliminary inspection of typical contents, we coded aspects related to the components of the myth of graphology, including whether a percentage of companies using graphology was cited, whether specific countries were mentioned, whether fear of graphology was mentioned, whether it was mentioned that handwritten letters do not always mean graphology will be used, and, finally, whether criticism of graphology based on its low validity was mentioned. Based on double-coding of 14 books by two independent coders, we computed Cohen's  $\kappa$  to measure interrater agreement for all coding procedures.  $\kappa$  values varied between .68 and 1.0, indicating agreement ranging from sufficient to perfect.

### 9.2. Results and discussion

Results are shown in Table 2 as the proportion of books exhibiting a particular feature. Graphology is mentioned in a large majority of books (91.4%). The fact that several books feature it on the cover is especially telling, because covers are designed to attract the attention of potential buyers. Only five books mentioned specific prevalence rates of graphology (57% of organizations, mentioned twice, and 80%, mentioned three times). But some mentioned specific countries. All such mentions opposed France (where graphology is presented as highly prevalent) to other countries (where it is presented as not). The latter countries are almost always 'other European countries' or 'Anglo-Saxon countries.' Several books mention fear of graphology (e.g., 'should one be afraid of graphology?', 'many applicants fear the use of graphology'). This is interesting because fear may be an emotion related to

Table 2. Content analysis results of advice literature ( $N = 35$ ) on application letters

	Frequency (percentage)
Mentions graphology	
On the cover	5 (14.3%)
In the table of contents	14 (40.0%)
In the text	32 (91.4%)
Mentions prevalence of graphology (specific figure)	5 (14.3%)
Mentions specific countries	15 (42.8%)
Mentions fear of graphology	13 (37.1%)
Mentions that handwritten letter not necessarily sign of graphology use	11 (31.4%)
Mentions criticism of graphology	4 (11.4%)

the spread of the myth (see Heath *et al.*, 2001). By suggesting that people are afraid of being evaluated by this method, advice books may imply that graphology is a factor to be reckoned with in the selection process. Eleven books mention that handwritten letters are not necessarily a sign of graphology use. Thus, this aspect of the myth is challenged, albeit in a minority of books. Books that mention this aspect have not been published more recently than those that do not [average year of publication is 5.8 vs 5.5 years ago,  $t(33) = .27$ , NS], indicating that content challenging the myth is not a new trend. Only four books mention that graphology is a problematic selection method. Indeed, many books treat the validity of graphology as self-evident, for example by advising readers not to try and disguise their real handwriting because graphologists can detect faking. Several books also mention that graphology is a 'human science.' This converges with beliefs of French HR practitioners, many of whom are convinced that graphology has scientific status (Balicco, 2002). Thus, the scientific perspective is not well represented in this literature, which implicitly conveys the idea that graphology is valid and based on science.

## 10. General discussion

In this research, we started out by describing two widespread beliefs that potentially constitute a myth about the use of graphology in personnel selection. The first belief is that graphology is used by a majority of organizations in several European countries. The second belief is that the requirement to submit a handwritten application letter in a selection process is a sign that graphology will be used. If graphology is indeed as important for organizations as the myth suggests, it follows that job ads should often require submission of a handwritten application letter. But in Study 1, we found that this is rarely the case. This is strong indirect evidence against the contention that graphology is used by a majority of organizations. Furthermore, in Study 2, we interviewed recruiters that require handwritten letters (so-called users), finding that handwriting analysis is only one of the purposes of such letters. Indeed, it is the least frequent among four purposes we inquired about. Requirements for handwritten letters originated more from individual recruiters than from the organizations in which they work, which also runs counter to the myth of graphology. From Studies 1 and 2, we can conclude that graphology probably is not used by many Swiss organizations, and that handwritten letters are not reliable indicators for handwriting analysis.

In Study 3, we studied the beliefs of non-user recruiters and students about to enter the job market. Relative to users, both overestimate the frequency with which handwritten letters are used to interpret hand-

writing. Job market actors erroneously believe that handwritten letters and graphology are linked: In Study 4, a fictive job ad requiring handwritten application letters led participants to expect that graphology would be used in the selection process. Thus, the second component of the myth is used by potential applicants to interpret job ads.

In Study 5, we analyzed the content of the French-language advice literature on application letters. Graphology is prominently represented in this literature in various ways. However, the scientific evidence against graphology is only rarely mentioned. In many books, the validity of graphology is taken for granted. Thus, the advice literature is one potential medium by which the myth of graphology is transmitted.

This research has some limitations. First, as discussed above, we based our conclusion about the low prevalence of graphology on whether handwritten letters were required in job advertisements. This conclusion may not be warranted, because handwritten letters may be required at a later stage in the selection process (see also Aguinis *et al.*, 2005, for a similar use of job ads). Thus, the analysis of job ads may underestimate the actual prevalence of graphology use. On the other hand, however, our estimates converge with independent survey evidence (König *et al.*, 2007). Nevertheless, further exploration of the potential use of job ads as indicators of selection practices is necessary. Second, the sample sizes in Studies 2 and 3 are small, reflecting the difficulty of locating recruiters that systematically use or do not use handwritten application letters. In other words, the samples may not be representative, which may diminish the accuracy of the prevalence percentages we computed. However, the fact that they are so much lower than many reported figures in the media suggests that a myth of graphology does indeed exist. A third limitation is that, although we have debunked the myth for Switzerland, graphology may still be used by many organizations in other countries, especially France. However, it seems possible that in other countries too, claims of high prevalence may be exaggerated. It is probably worth examining the evidence for graphology use in other countries.

Our results have implications for research. They offer an explanation for why graphology continues to persist in practice, despite overwhelming scientific evidence of its lack of validity. Part of the explanation is simply that the persistence of graphology is less important than previously assumed. However, its persistence may be facilitated by tolerant attitudes toward its use. If job market actors believe that a majority of organizations use graphology in the selection process, they may develop such attitudes. In particular, Studies 2 and 3 showed that a phenomenon analogous to pluralistic ignorance (Prentice & Miller, 1996) holds: although few recruiters who use handwritten letters

are actually interested in interpreting handwriting itself, many job market actors (potential applicants and recruiters) believe that they are. Ironically, scientific publications (e.g., Schmidt & Hunter, 1998) also propagate the myth, and may thus unwittingly contribute to the persistence of graphology, despite efforts to dissuade readers from its use. The myth may itself be self-perpetuating: at some point the sheer ubiquity of its two components in various media, in conversations and in people's minds may lead to circularity in the chains of evidence adduced to support them. An example is Levy (1979), an article often presented as a primary source but which contains no data whatsoever.

Our findings raise important questions for other selection practices. Many popular practices advertise themselves by virtue of their alleged widespread use. For example, the MBTI is often described as the most widely used personality test in the world (Bayne, 2003). Although this may be true, such claims may simply get repeated through imitation, thereby perpetuating a myth. More importantly, it is also possible that beliefs in the widespread use of the MBTI reinforce beliefs in its validity as a selection instrument, especially taking into account the correlations between respondents' perceptions of how widespread a selection technique is and their perceptions of favorability (Bertolino & Steiner, 2007; Nikolaou & Judge, 2007; Phillips & Gully, 2002). Our results thus underscore the need to explore the sources and content of beliefs about hiring practices. A better understanding of widespread beliefs may be instrumental in ultimately increasing the diffusion of research findings and narrowing the scientist-practitioner gap that has become a major issue in the field of organizations (e.g., Anderson, 2007).

Our results also have implications for organizations. Few recruiters are interested in interpreting handwriting. Application instructions requiring the submission of a handwritten application letter may have constituted an indicator for graphology use in the past, but they probably do not today. Nevertheless, Study 4 showed that participants develop clear expectations about the use of graphology from application instructions. Thus, organizations should be aware that instructions requiring handwritten application letters may invite incorrect and undesirable inferences about the nature of their selection procedures (e.g., that they regularly use graphology as a selection tool). More generally, a better understanding of widespread beliefs could benefit organizations by allowing them to avoid potentially misleading inferences by applicants.

## Acknowledgements

We are grateful to Ute-Christine Klehe, Marianne Schmid Mast, two anonymous reviewers and internal

colloquium participants for their valuable comments on previous drafts of this article.

## Notes

1. For reasons of space, we are not able to report other examples we have documented of extreme accounts, but can make them available on request.
2. Our database is representative of German-speaking Switzerland. However, French-speaking Switzerland might potentially have more ads requiring handwritten letters, because graphology may be used more often in French-speaking contexts (Shackleton & Newell, 1994). We conducted a similar analysis of French-language ads published in 2006 ( $N = 10,462$ ), and found a similar figure: Only 2.4% require handwritten letters.
3. There are no significant correlations between recruiters' answers to each question (all  $r_s < .14$ ). Thus, recruiters that indicate using handwritten letters to analyze handwriting do so independently of the other purposes.

## References

- Aguinis, H., Michaelis, S.E. and Jones, N.M. (2005) Demand for Certified Human Resources Professionals in Internet-Based Job Announcements. *International Journal of Selection and Assessment*, **13**, 160–171.
- Anderson, N. (2007) The Practitioner–Researcher Divide Revisited: Strategic-level bridges and the roles of IWO psychologists. *Journal of Occupational and Organizational Psychology*, **80**, 175–183.
- Anderson, N. and Witvliet, C. (2008) Fairness Reactions to Personnel Selection Methods: An international comparison between the Netherlands, the United States, France, Spain, Portugal, and Singapore. *International Journal of Selection and Assessment*, **16**, 1–13.
- Bailis, D.S. and MacCoun, R.J. (1996) Estimating Liability Risks with the Media as Your Guide: A content analysis of media coverage of civil litigation. *Law and Human Behavior*, **20**, 419–429.
- Balocco, C. (2002) L'utilisation de la graphologie dans le recrutement de cadres au sein des cabinets conseils [The use of graphology in executive hiring by consulting firms]. *L'Orientation Scolaire et Professionnelle*, **31**, 195–222.
- Bangerter, A. and Heath, C. (2004) The Mozart Effect: Tracking the evolution of a scientific legend. *British Journal of Social Psychology*, **43**, 1–37.
- Bayne, R. (2003) Love, Money and Studying. *The Psychologist*, **16**, 529–531.
- Bertolino, M. and Steiner, D.D. (2007) Fairness Reactions to Selection Methods: An Italian study. *International Journal of Selection and Assessment*, **15**, 197–205.
- Best, J. (2001) *Damned Lies and Statistics: Untangling numbers from the media, politicians and activists*. Berkeley: University of California Press.
- Bruchon-Schweitzer, M. and Ferrieux, D. (1991) Les méthodes d'évaluation du personnel utilisées pour le recrutement en France [Methods of personnel evaluation used for

- hiring in France]. *L'Orientation Scolaire et Professionnelle*, **20**, 71–88.
- Brunvand, J.H. (1981) *The Vanishing Hitchhiker: American urban legends and their meanings*. New York: W.W. Norton.
- Dean, G.A., Kelly, I.W., Saklofske, D.H. and Furnham, A. (1992) Graphology and Human Judgment. In: Beyerstein, B.L. and Beyerstein, D.F. (eds), *The Write Stuff: Evaluations of graphology, the study of handwriting analysis*. Buffalo, NY: Prometheus Books, pp. 342–396.
- Devoe, S. and Heath, C. (2006) Extreme Comparisons: Biased information flows and social comparison. Unpublished manuscript, Graduate School of Business, Stanford University.
- DiMaggio, P.J. and Powell, W.W. (1983) The Iron Cage Revisited: Institutional isomorphism and collective rationality in organizational fields. *American Sociological Review*, **48**, 147–160.
- Dipboye, R.L. (1994) Structured and Unstructured Selection Interviews. Beyond the Job-Fit Model. *Research in Personnel and Human Resources Management*, **12**, 79–123.
- Driver, R.W., Buckley, M.R. and Frink, D.D. (1996) Should We Write Off Graphology? *International Journal of Selection and Assessment*, **4**, 78–86.
- Gilovich, T. (1987) Secondhand Information and Social Judgment. *Journal of Experimental Social Psychology*, **23**, 59–74.
- Greasley, P. (2000) Handwriting Analysis and Personality: The creative use of analogy, symbolism, and metaphor. *European Psychologist*, **5**, 44–51.
- Harzing, A.-W.K. (1995) The Persistent Myth of High Expatriate Failure Rates. *International Journal of Human Resource Management*, **6**, 457–474.
- Heath, C., Bell, C. and Sternberg, E. (2001) Emotional Selection in Memes: The case of urban legends. *Journal of Personality and Social Psychology*, **81**, 1028–1041.
- Hines, T. (1987) Left Brain/Right Brain Mythology and Implications for Management and Training. *Academy of Management Review*, **12**, 600–606.
- Klehe, U.C. (2004) Choosing How to Choose: Institutional pressures affecting the adoption of personnel selection procedures. *International Journal of Selection and Assessment*, **12**, 315–330.
- König, C.J., Klehe, U.-C., Berchtold, M. and Kleinmann, M. (2007) Reasons for being selective when choosing personnel selection procedures. Unpublished manuscript, University of Zurich, Switzerland.
- Leonard, B. (1999) Reading Employees. *HR Magazine*, **4**, 67–73.
- Levy, L. (1979) Handwriting and Hiring. *Dun's Review*, **113**, 72–79.
- Lévy-Leboyer, C. (1990) *Evaluation du personnel: Quelles méthodes choisir? [Evaluating personnel: What methods to choose?]*. Paris: les Editions d'organisation.
- Lievens, F. and De Paepe, A. (2004) An Empirical Investigation of Interviewer-Related Factors that Discourage the Use of High Structure Interviews. *Journal of Organizational Behavior*, **25**, 29–46.
- Neter, E. and Ben-Shakhar, G. (1989) The Predictive Validity of Graphological Inferences: A meta-analytic approach. *Personality and Individual Differences*, **10**, 737–745.
- Nikolaou, I. and Judge, T.A. (2007) Fairness Reactions to Personnel Selection Techniques in Greece: The role of core self-evaluations. *International Journal of Selection and Assessment*, **15**, 206–219.
- Olson, J.M., Roese, N.J. and Zanna, M.P. (1996) Expectancies. In: Higgins, E.T. and Kruglanski, A.W. (eds), *Social Psychology: Handbook of basic principles*. New York: Guilford, pp. 211–238.
- Pfeffer, J. (2007) A Modest Proposal: How we might change the process and product of management research. *Academy of Management Journal*, **50**, 1334–1345.
- Phillips, J.M. and Gully, S.M. (2002) Fairness Reactions to Personnel Selection Techniques in Singapore and the United States. *International Journal of Human Resource Management*, **13**, 1186–1205.
- Prentice, D.A. and Miller, D.T. (1996) Pluralistic Ignorance and the Perpetuation of Social Norms by Unwitting Actors. *Advances in Experimental Social Psychology*, **28**, 161–209.
- Rafaeli, A. (2006) Sense-Making of Employment: On whether and why people read employment advertising. *Journal of Organizational Behavior*, **27**, 747–770.
- Rosnow, R.L. and Fine, G.A. (1976) *Rumor and Gossip: The social psychology of hearsay*. New York: Elsevier.
- Rynes, S.L., Colbert, A.E. and Brown, K.G. (2002) HR Professionals' Beliefs about Effective Human Resource Practices: Correspondence between research and practice. *Human Resource Management*, **41**, 149–174.
- Sacchi, S., Salvisberg, A. and Buchmann, M. (2005) Long-Term Dynamics of Skill Demand in Switzerland from 1950–2000. In: Kriesi, H., Farago, P., Kohli, M. and Zarin-Nejadan, M. (eds), *Contemporary Switzerland: Revisiting the special case*. Palgrave: Houndmills, UK, pp. 105–134.
- Schmidt, F.L. and Hunter, J.E. (1998) The Validity and Utility of Selection Methods in Personnel Psychology: Practical and theoretical implications of 85 years of research findings. *Psychological Bulletin*, **124**, 262–274.
- Schoenenberger, A. and Zarin-Nejadan, M. (2005) *L'économie suisse [The Swiss Economy]*. Paris: Presses Universitaires de France.
- Shackleton, V. and Newell, S. (1994) European Management Selection Methods: A comparison of five countries. *International Journal of Selection and Assessment*, **2**, 91–102.
- Spector, P.E. (2006) Method Variance in Organizational Research: Truth or urban legend? *Organizational Research Methods*, **9**, 221–232.
- Steiner, D.D. and Gilliland, S.M. (1996) Fairness Reactions to Personnel Selection Techniques in France and the United States. *Journal of Applied Psychology*, **81**, 134–142.
- Zaugg, R.J. (1996) *Integrierte Personalbedarfsdeckung: Ausgewählte Gestaltungsempfehlungen zur Gewinnung ganzheitlicher Personalpotentiale [Integrated fulfilment of personnel demand: Selected recommendations for producing holistic personnel potential]*. Bern, Switzerland: Haupt.