

PERSONNEL SELECTION IN INDUSTRY AND PUBLIC ADMINISTRATION: FROM THE TRADITIONAL VIEW TO THE STRATEGIC VIEW

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This article presents a review of research on personnel selection carried out in recent years. Two selection models are examined: the traditional model and the strategic model. We also review empirical research on procedures and predictors typically used in the selection processes. The predictive validity of each predictor is considered, alone, in combination with a second predictor and in combination with two other predictors, and maximum operative validity is determined. The best combination of predictors was found to involve a general cognitive ability test supplemented by a structured behavioural interview plus a personality questionnaire assessing conscientiousness. Finally, new challenges in the light of recent Spanish legislation are discussed and some suggestions are made for practitioners.

Key words: selection, test, interview, validity.

Este artículo presenta una revisión de la investigación en selección de personal realizada en los últimos años. Dos modelos de selección se examinan: el modelo tradicional y el modelo estratégico. También se revisa la investigación empírica sobre los procedimientos y predictores habitualmente utilizados en los procesos de selección. Se muestra cual es la validez predictiva de cada predictor en solitario, combinado con un segundo predictor o combinado con dos predictores, mostrando la validez operativa máxima. Se observa que la mejor combinación de predictores es la formada por un test de capacidad cognitiva general suplementado por una entrevista conductual estructurada y un cuestionario de personalidad que mida el factor de conciencia. Se discuten los nuevos retos debidos a la nueva legalidad española y se sugieren pautas de actuación para los profesionales.

Palabras clave: selección, tests, entrevista, validez.

Personnel selection is a process through which organizations (companies, institutions, organs of public administration, etc.) decide which of the aspirants for a particular position is the most appropriate. In other words, personnel selection is a decision-making process about the suitability of the candidates for vacant positions. Elsewhere we have identified three characteristics in this definition of personnel selection: "(1) it is necessary to use assessment instruments; if they are not used, the process can indeed be considered as one of recruitment, but not of personnel selection; (2) the objective of these instruments is to permit decision-making about the suitability of candidates for a post, and (3) a professional qualified in the use of such instruments is required (Salgado, Moscoso & Lado, 2006, p. 104)". In order for this process to be carried out in the appropriate manner it is necessary to know the characteristics of the position (tasks, functions, areas of activity, instruments used in the job, necessary knowledge and training, etc.) and to determine the extent to which the aspirants possess the cognitive abilities, knowledge, aptitude, skills, general abilities, personality

dimensions, experience and other characteristics necessary to do the job well. These characteristics (cognitive abilities, knowledge, etc.) have in recent years come to be called *competencies*, and personnel selection based on their assessment to be called *competency-based selection*. As such, competency-based selection is not distinguished from what, in line with a strictly orthodox approach to selection (strict application of the classic principles of selection), has been the traditional practice. However, it should be borne in mind that, in parallel with the competency-based selection concept, the *strategic personnel selection* model has also been developed (see Salgado, Moscoso & Lado, 2006 for a fuller explanation). This adds to the traditional conception of selection processes the idea that they must be aligned with the organization's objectives and the notion that management of selection processes cannot be conceived independently of the management of other processes, such as training, career development, performance assessment or compensation.

Personnel selection is, therefore, one of the critical processes of integrated human resources management in organizations, insofar as it strongly conditions the effectiveness of management processes subsequent to the selection. Indeed, if personnel selection is correctly conducted it will permit the recruitment of high-performing staff who, given their very characteristics, will take good advantage of training, will have excellent promotion

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possibilities, and will present a turnover rate within the margins of acceptability for companies and, in general, an adequate level in all the final processes affecting the success of the organization. For all of these reasons, the tasks customarily included in the personnel selection process merit reconsideration.

TRADITIONAL PERSONNEL SELECTION AND STRATEGIC PERSONNEL SELECTION

The instruments that can be employed in the selection process are extremely numerous, and include: application forms, curriculum vitae, employment records, interviews, cognitive skills tests, psychomotor skills tests, personality tests and questionnaires, simulations (group dynamics, "in-basket" tests, business games, etc.), work-sample tests, references, and so on. The particular instruments employed ultimately depend on the selection approach or model used by the organization in question. Two basic models of selection can currently be identified, referred to as the traditional selection model and the strategic selection model, respectively.

The traditional model of selection is based on a conception of the economy and the labour market characterized by great productive stability. This traditional model assumes that an employee does and will do the same tasks year in year out for a considerable period. Hence, organizations seeking highly productive employees must make their recruitment processes capable of ensuring that employees possess the specific knowledge or characteristics that they can put into practice immediately. To this end, organizations that use the traditional model carry out personnel selection using methods more or less appropriate for the economic contexts in which their activity takes place. Thus, for example, three selection instruments are generally employed in selection processes made on the basis of this conception: the curriculum vitae, the interview and references. With some variants, such as the use of tests and professional examinations, this could be considered the classic selection process for the vast majority of companies and organizations. If we reflect a little on this classic selection process it becomes clear that, regardless of the instruments employed, the recruitment decision basically revolves around whether candidates possess sound knowledge and experience in relation to the position for which they have applied. If the person fulfils these requirements there is a high likelihood of their being able to do the job effectively.

The second model of personnel selection, which we have called the strategic model, is based on a different conception of the economy and the employment market. This model starts out from the premise that the economic scenario is characterized by volatility and change, and that in the future the volatility of the scenario will increase. Moreover, the economy and the employment market are becoming more and more globalized,

and frontiers and barriers are disappearing. An illustrative example of such volatility is provided by the life cycles of many products. Years ago it was common to observe life cycles of ten, fifteen, twenty years or more. However, today the life cycle of most products is less than five years, and in some cases it is even less than a year (consider, for example, the computer industry). One consequence of this volatile scenario are the new demands for human resources in organizations. The shortening of life cycles of products and services means that jobs are more demanding in terms of information processing and decision-making, and that there is more need for teamwork and greater interdependence between employees. Also implied in this modern context is a need for closer attention to elements that affect productivity over and above task performance per se, and greater concern for employees' safety and physical and mental health. All of this signifies a considerable increase in the complexity of jobs in comparison to the past.

From the perspective of strategic selection it is considered that, if henceforth the essential characteristic of our jobs will be their volatility and ever-changing tasks (though not functions), the fact that a person knows very well how to do a job and has the necessary knowledge for doing it today offers us no guarantee of their being an effective and highly productive person in the future. Thus, the characteristics required of applicants will be a capacity for learning, innovation and creativity, a capacity for teamwork, adaptability and flexibility, self-motivation, ability to orient one's work toward service of the organization's current and potential clients, orientation to quality, virtual teamwork skills, information and communications technology skills, conscientiousness, emotional stability, communication skills and languages. All of these qualities, together with others we could mention, mean that the instruments required in the context of strategic personnel selection are different: tests of general mental ability, personality inventories based on the "Big Five" factors, criteria-centred personality tests, structured behavioural interviews, situational judgement tests, simulations, structured references and Internet-based assessment systems. Moreover, such instruments are used in a combined fashion to produce a specific predictive equation for each criterion to be predicted, such as performance, training, career progress, counter-productive behaviour, withdrawal and abandonment behaviours or self-assessment.

INSTRUMENTS USED IN PERSONNEL SELECTION

Regardless of whether the selection model used is the traditional one or the strategic one, the appositeness of the recruitment decision will depend on the validity of the instruments used for making that decision. Hence, it is appropriate to review the latest data on the validity of the tools used, or with potential for use, by professionals involved in recruitment. At present, the most widely used method for reaching a conclusion on the

validity of an instrument is meta-analysis, a quantitative technique of integration of research results (Hunter & Schmidt, 2004). Today we have access to meta-analyses carried out to determine the validity and utility of nearly all the instruments employed in personnel selection (see Salgado, Viswesvaran & Ones, 2001 and Schmidt & Hunter, 1998, for a fuller review). The review we make here will focus on the instruments most commonly used in Spain: cognitive skills tests, interviews, personality tests and questionnaires, references, job-knowledge tests and assessment centres. A summary of the results of meta-analytic research is shown in Tables 1 and 2. However, before starting to examine in more detail the validity of the instruments, it should be borne in mind that these procedures can be of two different types: variables or methods. The difference between a variable and a method resides in the fact that variables are not in turn composed of other variables or constructs, whilst methods consist in groupings of a range of variables, even though these

may not always be formally identified. For example, general cognitive ability is not made up of other variables, while interview ratings are the combination of the effects, to varying extent, of, general cognitive ability, diverse personality characteristics, knowledge about the job, experience, and social skills, among others. The same can be said of simulations, such as assessment centres, of ratings of merits and training, or of examinations to test knowledge, though the particular variables and their degree of implication may vary.

a) Tests of General Mental Ability and Cognitive Ability

General mental ability (GMA) can be defined as an individual's capacity to learn material or a skill rapidly and accurately in optimal instruction conditions. Less time taken and greater accuracy indicate greater mental ability. Thus, examples of high general mental ability would be: solving problems correctly, making quick and correct decisions, judging situations accurately, being capable of using abstract reasoning, or acquiring knowledge and being able to use it in new contexts. General mental ability is sometimes referred to as general cognitive ability, g factor or general intelligence. Obviously, there are other, more specific mental abilities that tend to be classified as cognitive abilities. According to the taxonomies most widely used in the Psychology of Work, (e.g., Fleishman & Reilly, 1992), by cognitive abilities we should understand aptitudes, skills or capacities such as inductive reasoning, verbal fluency, numerical ability, attention, perception and memory. Thus, the category of cognitive ability tests would include all those tests aimed at assessing them, regardless of their format (pencil and paper, manipulation of objects, computer, etc.). Test of general mental ability and of specific abilities have been employed since the early 20th century in organizational settings and, more specifically, in personnel selection decisions. A study analyzing the use of ability tests in 12 EU countries showed that in Spain 72% of companies used this type of test in selection processes, their average use across the 12 countries being 34% (Dany & Torchy, 1994).

Currently there are two principal lines of work on personnel selection with respect to cognitive structure. One of these is based on the view that specific abilities do not give added validity beyond the g factor, while the other is associated with those authors who propose the existence of multiple abilities that do indeed provide validity over and above the g factor. The results of research appear to indicate that the former line of work is correct, that is, that specific abilities do not serve to enhance the prediction of assessments of performance in a job or success in training (see Salgado, Viswesvaran & Ones, 2001).

The results obtained in research over the last 30 years have shown that that best instruments for recruitment decisions with regard to applicants for entry into an organization are cognitive ability tests, above all other types of instrument. Recently,

TABLE 1
RELIABILITY AND VALIDITY OF INDIVIDUAL VARIABLES OF PERSONNEL SELECTION

Method	Reliability	Operative Validity
General Cognitive Ability	.83	.71
Mathematical Reasoning	.85	.52
Spatial-Mechanical Reasoning	.77	.51
Verbal Reasoning	.83	.35
Perceptual Ability	.67	.52
Memory	.77	.56
Personality – Conscientiousness	.80	.30
Experience	1.0	.25 ¹
Personality – Emotional Stability I	.85	.20
Personality – Agreeableness	.79	.17

Note. Operative validity = observed validity corrected reliability of the criterion and indirect restriction in the predictor.
¹ = operative validity for between 5 and 10 years' experience in the job.

TABLE 2
RELIABILITY AND VALIDITY OF PERSONNEL SELECTION METHODS

Method	Reliability	Operative Validity
Structured Behavioural Interview	.83	.63
Knowledge Exams (Tests)	.80	.45
Assessment Centre - Simulations	.70	.37
Conventional Structured Interviews	.65	.33
Personal References	.60	.26
Rating of Merits and Training	.80	.18
Non-structured Interviews	.50	.14

Note. Operative validity = observed validity corrected reliability of the criterion and indirect restriction in the predictor.

Salgado, Anderson and cols. (2003a, 2003b) performed several meta-analyses of studies on cognitive abilities carried out within the European Union and found similar levels of validity in all countries, obtaining mean validity coefficients of .71 (corrected for indirect restriction of range) for assessments of job performance.

In the Spanish context but also in that of many other countries, the fact that cognitive ability tests are potential predictors of job success has not made them immune from inappropriate use, which can ultimately lead to deficiencies in professional practice. In Spain there are many cognitive ability tests on the market that neither present data on their reliability and validity nor use criteria based on representative samples of relevant adult employees; some, indeed, including some of the most popular ones, fail to present any type of data whatsoever. Clearly, the use of such instruments in these types of conditions can only serve to damage the prestige of tests and of the professional who uses them, with negative consequences for the entire professional community and for the organization concerned.

b) Interview

The interview is without doubt the most widely used instrument for personnel selection, both in Spain and in all the other countries for which such information is available. The conclusion of numerous studies is that practically 100% of those recruited for a position must get through at least one interview during the personnel selection process (Salgado et al., 2001). For this reason it is clear that the interview merits special consideration among the set of instruments used for personnel selection.

Over the last 70 years there have been periodical reviews of research on the validity of the personnel selection interview. Up to 1987 there had been 7 large-scale reviews of the literature, all of them concluding that the interview was characterized by low reliability, that is, first, that two different interviewers scarcely coincided in their appreciations of an applicant, and second, that their validity was low or even zero, and that they contributed nothing to the prediction of performance obtained through other instruments, such as cognitive ability tests. This raised a significant paradox: easily the most widely used instrument for predicting candidates' job performance was an instrument incapable of predicting it. How, then, could the widespread use of the interview be explained? Possible responses to this question include: (1) The interview is an easy instrument to use. Practically anyone can, apparently, use it without the need for any particular qualification; (2) It is a highly versatile instrument, since it can be applied to any position, organization or situation; (3) It is the best means of getting to know candidates personally; (4) It permits candidates to explain personally their merits in relation to the post; (5) It allows the applicant to be provided with personalized information about

the organization; (6) It is relatively cheap by comparison with other selection instruments; and (7) It is more acceptable to both managers and applicants than other instruments potentially involved in selection processes. Such explanations, while sufficient for maintaining the interview among the selection instruments to be considered, do not constitute an argument for its use as a tool for making recruitment decisions. Even so, recent research has shown that, with certain characteristics and in certain conditions, the selection interview boasts reliability and validity, increases the validity of batteries of selection instruments and has appreciable economic advantages (Salgado & Moscoso, 2005).

It is the format (degree of structuring) of the interview that seems to most influence its lack of validity, and to remedy this situation several alternatives have been proposed, which would fall into the general category of "structured behavioural interview" (see Salgado & Moscoso, 2005 for a fuller treatment of this type of interview). The main defining characteristics of structured behavioural interviews, as against conventional interviews, would be: (1) the questions making up the interview are developed based on jobs analysis, employing the Critical Incidents technique; (2) they involve questions whose content refers exclusively to behaviours in the relevant post; (3) each candidate is asked all the questions prepared; (4) the interview process is repeated with all the interviewees; (5) applicants' responses are assessed by means of "behavioural observation scales" or "rating scales with behavioural anchoring", also developed through jobs analysis (EVAS; see Salgado & Moscoso, 2005, for a description of these scales). Moscoso (2000), reviewing the predictive validity of the personnel selection interview, was able to show that, compared to the case of other types, the structured behavioural interview presents a validity similar to that of the best instruments employed in personnel selection (e.g., cognitive ability tests), and even superior to that of some (such as personality measures or assessment centres). Recent studies carried out in Spain (Saez, 2007; Salgado, Gorriti & Moscoso, 2007) have shown the validity of structured interviews applied in panel form to be .63, which indeed situates them among the best instruments for personnel selection.

In recent years some studies have also been conducted with the aim of clarifying what the selection interview actually measures. For example, Salgado and Moscoso (2002) carried out a meta-analysis in which they classified interviews according to their degree of structuring: low-structure interviews (which would correspond to conventional interviews) and high-structure interviews (structured behavioural interviews). Their results showed that the two types of interview are related to different variables. Thus, conventional or low-structure interviews appear to be basically measuring general mental ability and personality characteristics, that is, when interviewers carry out this type of

interview they focus on intrinsic factors of the candidate. However, highly structured or structured behavioural interviews principally measure knowledge about the job and work experience. Thus, such interviews concentrate on finding out whether the candidate would perform well in the job.

c) Personality Measures

Traditionally, selection processes have included assessments of personality characteristics, especially those processes carried out in the context of individual practices or consultancy. But until little more than a decade ago these personality measures consisted, in the vast majority of cases, in the use of questionnaires and tests designed for assessing the possibility of pathologies or disorders, such as the MMPI, or which measured only a limited number of normal personality dimensions. Research carried out using such instruments has shown that they have scarce predictive validity in relation to job performance. However, the last 15 years have seen the consolidation of a structural model of personality whose basic assumption is that the so-called "Big Five" personality factors are sufficient for explaining the relationships between personal characteristics. This model is called the Big Five Personality Factors (or Dimensions) Model. The factors have different names depending on the author in question, but the most widely-used version of the terms is as follows (I) Emotional Stability (as against Neuroticism), (II) Extraversion (as against Introversion), (III) Openness to Experience (as against Closure to Experience), (IV) Agreeableness (as opposed to Antagonism) and (V) Conscientiousness (as opposed to Unscrupulousness). Where there is a large degree of consensus among researchers is on the meaning of the factors. Thus, Emotional Stability refers to the person's emotional adjustment (as opposed to maladjustment, neuroticism or emotional instability), and would cover characteristics such as sadness, anxiety, insecurity, irritation, worry or anger, as against its opposite pole, which would be characterized by emotional control, positive mood, self-confidence or calmness. For its part, Extraversion presents characteristics such as assertiveness, ambition, activity or optimism, while Introversion is characterized by the opposite traits. Openness to Experience is characterized by active imagination, aesthetic sensitivity, attention to internal feelings, preference for variety, intellectual curiosity and independence of judgement, and its opposite pole by conservatism in personal outlook, conventionalism in behaviour, practical manner and lack of imagination. Agreeableness characterizes people who are kind, friendly, cooperative, flexible in relations with others, trusting and tolerant, as against those who are harsh, competitive, egoistic, distrustful, hostile and rigid in their relations with others. The final factor, Conscientiousness, would group characteristics such as sense of duty, efficacy, planning, orderliness and

organization, rigour, responsibility, attention to detail, perseverance and will.

Various meta-analyses carried out over the last fifteen years have demonstrated the capacity of the Big Five to make predictions in relation to organizational criteria such as job performance, training success, job turnover, job satisfaction, counter-productive behaviours or career potential. Specifically, it was found that the Conscientiousness factor can predict various occupational criteria and that its validity is similar for all positions and organizations. A second personality dimension that predicts job performance in practically all types of post is Emotional Stability. Salgado (1997, 1998) found validity coefficients of .19 and .25 for Conscientiousness and Emotional Stability, respectively, and a more recent study (Salgado, 2003) showed that if the instruments used are developed within the Big Five Model the validity coefficient for Conscientiousness rises to .33.

In addition to this evidence on the criterion validity of the Big Five personality factors, other important data has been provided by several meta-analytic studies on the predictive validity of so-called integrity tests. These instruments measure conscientiousness, agreeableness and emotional stability, and research has shown them to be valid predictors of performance in a job and of counterproductive behaviours such as theft, discipline problems and absenteeism (Ones, Viswesvaran & Schmidt, 1993).

d) References

This is an assessment procedure frequently used in personnel selection, and customarily represents the end of the process of collecting information on a candidate. A broad range of variables have been associated with the use of references, and have been the object of study: for example, the type of posts that require asking the applicant for references, the size of organization most likely to use them, the percentage of their use, the type of information sought through references, and so on. In response to such questions, research shows that references are used both for high positions in organizations and for low-level posts (Lado, 2001). Likewise, studies do not suggest significant differences in the use of references associated with either size of company or volume of recruitment. In the practice of selection processes, both the content and structure of references show considerable diversity. Indeed, there scarcely exist any standard formats for obtaining references.

The reliability of references focuses on the degree of agreement among those providing the references. In this regard, recent studies suggest that references are an instrument with high reliability, the highest estimation for which is .70. As far as their validity for predicting organizational criteria and behaviours are concerned, Hunter and Hunter (1984) found a validity of .26, even if more recent studies (Lado, 2001) suggest that validity can be higher when a structured format is used.

e) Job-knowledge tests

This category can include at least three types of measure: job-knowledge tests, tacit knowledge tests and situational judgement tests. Use of these types of test is limited to situations in which candidates have been previously trained for the post, though such tests tend to be well accepted by candidates, since they show high apparent validity (similarity to job content). Studies carried out on the predictive validity of job-knowledge tests show that they serve to predict criteria such as job performance, success in training and performance in job-sample tests. Validity coefficients found range from .45 to .78. It has also been found that these validity coefficients are moderated by the similarity of the test to the job and by its complexity. The higher the test's similarity to the job and the greater its complexity, the higher the validity.

As regards tacit knowledge tests, this is a relatively new type of measure based on Sternberg's work on intelligence (Sternberg, 1997). Sternberg found that the correlation between tacit knowledge and job performance ranges from .20 to .40. Finally, a meta-analytic study revealed that a criterion validity for situational judgement tests of .34 (see Lievens, 2007).

f) Assessment centres

Assessment centres are made up of different exercises aimed at evaluating managerial behaviour. In addition to the use of traditional tests (personality, cognitive abilities, etc.) and interviews, situational exercises are set, which might include role-playing, group discussion exercises or in-basket tests. The last-named of these is quite common, and consists in presenting candidates with a set of memos, letters, telephone messages, etc. similar to those they would have to deal with in the actual job and asking them to organize all the information in the same way as they would in the real situation. Meta-analytic research shows the predictive validity of assessment centres to be .37, considerably lower than that of other instruments (such as interviews or tests) that are much cheaper, more flexible and less time-consuming.

Summary. The results discussed up to now lead us to two conclusions: (a) that ability measures are the best individual predictors of job performance, and (b) that some methods (procedures made up of variables) constitute good predictors of job performance, even though – on being composed of basic variables – their predictive capacity depends on that of those variables, a relationship which will strongly affect multiple prediction.

MULTIPLE PREDICTION OF JOB PERFORMANCE BASED ON THE BEST INSTRUMENTS AND VARIABLES

Once the validity of the different personnel selection instruments (variables) and methods is known, we can establish the maximum degree of prediction that can be achieved through the

application of a set of such selection procedures. The optimum combination is obtained on the basis of a prediction equation developed after a multiple regression analysis, which will permit us to establish two different aspects: (a) how much variance of job performance can be explained through the selection instruments, i.e., how much we are able to predict, and (b) the differential weight of each one of the instruments in the final rating of each applicant. In the present case we shall consider selection processes consisting of two and three instruments and determine the maximum degree of prediction that would be achieved. As initial variable we shall use general cognitive ability, given that it presents the highest validity coefficient of all the variables (it is the best individual predictor of performance). We shall then make combinations with the remaining most important variables in order to obtain the maximum degree of validity. Results of the prediction of performance using two variables are shown in Table 3, while those corresponding to the use of groups of three variables appear in Table 4.

The best combination of two predictors of performance is achieved using a measure of general cognitive ability supplemented by a structured behavioural interview ($R=.84$). The second best option is the combination of the measure of general cognitive ability with the personality factor called Conscientiousness ($R=.77$), and the third best combination is achieved with a measure of work experience ($R=.75$). From here on in, the contribution of a second predictor is relatively scarce or non-existent. For example, a measure of mathematical reasoning, of agreeableness, or of rating of merits produces an increase of .02 in total prediction. Supplementing general cognitive ability with a measure of emotional stability or of knowledge, an assessment centre or a measure of perceptual or spatial-mechanical ability or memory increases predictive capacity by .01. Supplementing general cognitive ability with a measure of verbal reasoning or a structured conventional interview contributes nothing to the prediction made on the basis of general cognitive ability.

When the prediction of performance is made by means of three predictor variables there is a group of three possibilities that offers an optimum combination with very similar results. The best combination and, consequently, the best selection system, would be that which included a measure of general cognitive ability together with a structured behavioural interview and a measure of the personality factor Conscientiousness. A second alternative that would also produce excellent results would involve substituting the measure of Conscientiousness by a rating of the applicant's merits, and a third would involve substituting the Conscientiousness measure or the rating of merits by a test of knowledge. Any one of these three alternatives would have essentially similar effects, and the decision on whether to use one or the other would have to be based on criteria of a non-psychometric nature, such as number of applicants, time

available, existence or not of Conscientiousness measures or knowledge tests, or agreements with union representatives in relation to rating of merits.

A second group of alternatives that would also give excellent results would be made up of a combination of a general cognitive ability measure supplemented by a measure of experience and another of Conscientiousness. Alternatively, the Conscientiousness measure could be substituted by a structured behavioural interview.

A third group of combinations of three predictors that would produce good results is the combination of a measure of general cognitive ability supplemented by a knowledge test and a measure of experience in the position or a rating of merits.

The final combinations that would produce good results, though markedly poorer than the optimum results, would consist in a structured behavioural interview supplemented by a knowledge test and a rating of merits or a rating of experience in the position.

TABLE 3
MULTIPLE PREDICTION OF PERFORMANCE WITH TWO PREDICTORS

Combination of Predictors	Multiple Operative Validity	R ²	% Loss
GCA + SBI	.84	.71	00
GCA + CO	.77	.59	17
GCA + EXP	.75	.56	21
GCA + MR	.73	.53	25
GCA + AG	.73	.53	25
GCA + REM	.73	.53	25
GCA + ES	.72	.52	25
GCA + JK	.72	.52	25
GCA + ASC	.72	.52	25
GCA + PA	.72	.52	25
GCA + CEM	.72	.52	25
GCA + MEM	.72	.52	25
GCA + VR	.71	.50	30
GCA + CSI	.71	.50	30

Note. GCA = General Cognitive Ability; SBI = Structured Behavioural Interview; CO = Conscientiousness; MR = Mathematical Reasoning; ES = Emotional Stability; PA = Perceptual Ability; CEM = Spatial-Mechanical Ability; MEM = Memory; VR = Verbal Reasoning; CSI = Conventional Structured Interview; EXP = Experience; AG = Agreeableness; REM = Rating of Employee's Merits; JK = Job Knowledge; ASC = Assessment Centre; Loss = Percentage loss of predictive capacity against the optimum combination $(R^2_i - R^2_o) / R^2_o$

TABLE 4
MULTIPLE PREDICTION OF PERFORMANCE WITH THREE PREDICTORS

Combination of	Multiple Operative Predictors	R ² Validity	% Loss
GCA + SBI + CO	.86	.75	0
GCA + SBI + REM	.85	.73	3
GCA + SBI + JK	.84	.71	5
GCA + EXP + CO	.81	.66	12
GCA + EXP + SBI	.79	.62	17
GCA + EXP+ JK	.76	.58	23
GCA + JK + REM	.73	.54	28
SBI + JK + REM	.66	.43	43
SBI + JK+ EXP	.60	.36	52

Note. GCA = General Cognitive Ability; SBI = Structured Behavioural Interview; CO = Conscientiousness; REM = Rating of Employee's Merits; JK = Job Knowledge; EXP = Experience; Loss = Percentage loss of predictive capacity against the optimum combination $(R^2_i - R^2_o) / R^2_o$.

NEW CHALLENGES FOR PERSONNEL SELECTION IN SPAIN

Having established the predictive capacity of personnel selection procedures, it is worth considering the challenges to be met in the coming years. In our view, research on personnel selection in Spain will have to provide responses in relation to three crucial aspects: (a) the possible effects of indirect discrimination in selection procedures; (b) the economic utility of the procedures, and (c) legal modifications in the public administration context and their consequences for selection. Let us briefly consider these three challenges facing selection.

(a) Indirect discrimination. Over a number of years, both in the United States and in many European countries (the United Kingdom, Holland, the Scandinavian countries, etc.), a considerable body of research has been built up on the possible discriminatory effects of selection procedures on populational groups protected by law (e.g., women, immigrants, minorities). In Spain, the recent legislation on equality between women and men included several articles referring directly to personnel selection procedures and methods, and a number of subsequent judicial decisions have been based on the finding that certain procedures have been employed in a discriminatory fashion (e.g., interviews and personality tests). However, the evidence available up to now is quite scarce (see García-Izquierdo & García-Izquierdo, 2007, for a review). The activity of professionals involved in the field of Work and Organizational Psychology will be affected by this issue in the coming years, so that it will be necessary to carry out research enabling psychologists to identify the tools to use in each case so as to avoid discrimination and bias against certain groups.

(b) Economic utility. This is a second challenge for researchers and professionals involved in the area of personnel selection. They will have to demonstrate the economic effect of their professional practice in relation to selection (e.g., increased profits, more savings) for their respective organizations, be they private (e.g., companies) or public (e.g., public administration). Until relatively recently it was difficult or even impossible for Work and Organizations Psychologists to determine the economic utility of their interventions. However, they now have access to methods and techniques, as well as software, for estimating such economic utility. A recent study (Salgado, 2007) showed, for example, the economic utility of the structured

behavioural interview for the selection of public-sector managers. The use of economic language, in the style of other departments within organizations, such as those of production, marketing or finance, will help strengthen the position of psychologists in organizations.

(c) Selection in Public Administration. Spain's new legal framework for recruitment in public administration, the Basic Statute of Public Employment (*Estatuto Básico del Empleado Público*), incorporates several requirements in relation to personnel selection that directly affect psychologists in the area of Work and Organizational Psychology: (1) the need to identify competencies, capacities, knowledge, personal characteristics and other variables related to effective performance in the post, (2) the need to guarantee the person's suitability for the position through methods and procedures that have shown their reliability, validity and lack of adverse effects; (3) the obligation to provide evidence of levels of individual and collective work performance and of how those levels are improved through the application of the selection methods and procedures employed, and (4) the requirement that selection procedures must be implemented by the relevant professionals, and not by those holding political, trades/professional union or other elected office, as previously the case; furthermore, selection board members must act on their own behalf, and not in representation of others. The implication of these stipulations is that the work of psychologists in organizations must be based on the technical and scientific principles of the profession, and that the demonstration of its value is essential.

GENERAL CONCLUSION

In recent years, both in Spain and the rest of Europe, substantial progress in research on personnel selection has been made, and many of the limitations that previously affected this area have been addressed. Today, professionals involved in personnel selection have at their disposal a vast arsenal of instruments and access to a large body of research that enables them to establish the validity of these instruments, thus allowing them to choose the most suitable ones in accordance with their specific needs. As a consequence of such progress, the work of these professionals has been strongly endorsed, and their role in organizations has become increasingly acknowledged and appreciated.

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REFERENCES

Dany, F. & Torchy, V. (1994). Recruitment and selection in Europe: Policies, practices, and methods. In C. Brewster &

- Hegewish (Eds). *Policy and practice in European human resource management: The Price-Waterhouse Cranfield Survey*. London, UK: Routledge.
- Fleishman, E.A. & Reilly, M.E. (1992). *Handbook of human abilities. Definitions, measurements, and job and task requirements*. Palo Alto, CA: Consulting Psychologists Press.
- García-Izquierdo, A.E. & García-Izquierdo, M. (2007). Discriminación, igualdad de oportunidades en el empleo y selección de personal en España. *Revista de Psicología de Trabajo y las Organizaciones*, 23, 111-138.
- Hunter, J.E. & Hunter, R.F. (1984). Validity and utility of alternative predictors of job performance. *Psychological Bulletin*, 96, 72-98.
- Hunter, J.E. & Schmidt, F.L. (2004). *Methods of meta-analysis. 2nd Edition*. Newbury Park, CA: Sage.
- Lado, M. (2001). Validez de constructo y de criterio de las referencias personales. Unpublished doctoral dissertation. Universidad de Santiago de Compostela. Departamento de Psicología Social y Básica.
- Lievens, F. (2007). Tests de juicio situacional: introducción y revisión de la investigación. *Revista de Psicología del Trabajo y las Organizaciones*, 23, 93-110.
- Moscoso, S. (2000). Selection interview: A review of validity evidence, adverse impact and applicant reactions. *International Journal of Selection and Assessment*, 8, 237-247.
- Ones, D.S., Viswesvaran, C. & Schmidt, F.L. (1993). Comprehensive meta-analysis of integrity tests. *Journal of Applied Psychology*, 78, 679-703.
- Sáez, J. (2007). Diseño y validación de una Entrevista Conductual Estructurada para la selección de agentes de policía local. *Revista de Psicología del Trabajo y las Organizaciones*, 23, 57-74.
- Salgado, J.F. (1997). The Five Factor Model of personality and job performance in the European Community. *Journal of Applied Psychology*, 82, 30-43.
- Salgado, J.F. (1998). The Big Five personality dimensions and job performance in army and civil occupations: A European perspective. *Human Performance*, 11, 271-288.
- Salgado, J.F. (2003). Predicting job performance using FFM and non-FFM personality measures. *Journal of Occupational and Organizational Psychology*, 76, 323-346.
- Salgado, J.F. (2007). La Utilidad Económica de la Entrevista Conductual Estructurada en la Selección de Personal de la Administración General del País Vasco. *Revista de Psicología del Trabajo y las Organizaciones*, 23, 139-154.
- Salgado, J.F. & Anderson, N. (2003a). Validity generalization of GMA tests across the European Community Countries. *European Journal of Work and Organizational Psychology*, 12, 1-17.
- Salgado, J.F., Anderson, N., Moscoso, S., Bertua, C., De Fruyt,

- F. & Rolland, J.P. (2003b). A meta-analytic study of GMA validity for different occupations in the European Community. *Journal of Applied Psychology, 88*, 1068-1081.
- Salgado, J.F., Gorriti, M. & Moscoso, S. (2007). La Entrevista Conductual Estructurada y el Desempeño Laboral en la Administración Pública Española: Propiedades Psicométricas y Reacciones de Justicia. *Revista de Psicología del Trabajo y las Organizaciones, 23*, 39-55.
- Salgado, J.F. & Moscoso, S. (2002). Comprehensive metaanalysis of the construct validity of the employment interview. *European Journal of Work and Organizational Psychology, 11*, 299-324.
- Salgado, J.F. & Moscoso, S. (2005). *La entrevista conductual estructurada de selección de personal*. Madrid. Pirámide.
- Salgado, J.F., Moscoso, S. & Lado, M. (2006). Reclutamiento y Selección de Personal. In J. Bonache & A. Cabrera (Dirs). *Dirección estratégica de personas*. Madrid: Prentice-Hall.
- Salgado, J.F., Viswesvaran, C. & Ones, D.S. (2001). Predictors used for personnel selection. In N. Anderson, D.S. Ones, H.K. Sinangil, & C. Viswesvaran (Eds). *Handbook of Industrial, Work, & Organizational Psychology. Vol 1*. (pp. 165-199). London, UK: Sage.
- Schmidt, F.L. & 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.
- Sternberg, R. (1997). Tacit knowledge and job success. In N. Anderson & P. Herriot (Eds.). *International handbook of selection and assessment* (pp. 201-213). London, UK: Wiley.