

This is a preprint version of the article. It is published in:  
International Journal of Selection and Assessment 18 (2010) 1, 17-27  
The final version is available at <http://dx.doi.org/10.1111/j.1468-2389.2010.00485.x>

Reasons for being selective when choosing personnel selection  
procedures

Cornelius J. König  
Universität Zürich

Ute-Christine Klehe  
Universiteit van Amsterdam

Matthias Berchtold  
Universität Zürich and Swiss Life

Martin Kleinmann  
Universität Zürich

We thank Filip Lievens for helpful comments on a previous version of this manuscript and Cordelia Kissling and Connie Voigt of HR Today as well as Mark Sandmeier of jobs.ch for their help with the data collection. Correspondence concerning this article should be addressed to Cornelius J. König, Universität Zürich, Psychologisches Institut, Binzmühlestr. 14/12, CH-8050 Zürich, Switzerland, or to [c.koenig@psychologie.uzh.ch](mailto:c.koenig@psychologie.uzh.ch).

### Abstract

The scientist-practitioner gap in personnel selection is large. Thus, it is important to gain a better understanding of the reasons that make organizations use certain selection procedures or not. Based on institutional theory, we predicted that six variables should determine the use of selection procedures: the procedures' diffusion in the field, legal problems associated with the procedures, applicant reactions to the procedures, their usefulness for organizational self-promotion, their predictive validity, and the costs involved. To test these predictions, 506 HR professionals from the German-speaking part of Switzerland filled out an online survey on the selection procedures used in their organizations. Respondents also evaluated five procedures (semi-structured interviews, ability tests, personality tests, assessment centers, and graphology) on the six predictor variables. Multilevel logistic regression was used to analyze the data. The results revealed that the highest odd ratios belonged to the factors applicant reactions, costs, and diffusion. Lower (but significant) odds ratios belonged to the factors predictive validity, organizational self-promotion, and perceived legality.

### Reasons for being selective when choosing personnel selection procedures

Choosing personnel selection procedures could be so simple: Grab your copy of Schmidt and Hunter (1998) and read their Table 1 (again). This should remind you to use a general mental ability (GMA) test in combination with an integrity test, a structured interview, a work sample test, and/or a conscientiousness measure. However, this idea does not seem to capture what is actually happening in organizations, as practitioners worldwide often use procedures with low predictive validity and regularly ignore procedures that are more valid (e.g., Di Milia, 2004; Lievens & De Paepe, 2004; Ryan, McFarland, Baron, & Page, 1999; Scholarios & Lockyer, 1999; Schuler, Hell, Trapmann, Schaar, & Boramir, 2007; Taylor, Keelty, & McDonnell, 2002). For example, the highly valid work sample tests are hardly used in the US, and the potentially rather useless procedure of graphology (Dean, 1992; Neter & Ben-Shakhar, 1989) is applied somewhere between occasionally and often in France (Ryan et al., 1999). In Germany, the use of GMA tests is reported to be low and to be decreasing (i.e., only 30% of the companies surveyed by Schuler et al., 2007, now use them). In Australia, 35% of companies never use situational interviews (Di Milia, 2004). None of the Scottish companies studied by Scholarios and Lockyer (1999) used assessment centers (ACs) – to name only a few examples.

This gap between what scientists say and what practitioners do has become a major issue in industrial, work, and organizational psychology, human resource management and related fields (e.g., Anderson, 2007; Anderson, Herriot, & Hodgkinson, 2001; Cascio & Aguinis, 2008a; Deadrick & Gibson, 2007; Drenth, 2008; Rynes, Bartunek, & Daft, 2001; Rynes, Giluk, & Brown, 2007; Shapiro, Kirkman, & Courtney, 2007; Van de Ven & Johnson, 2006; Walker, 2008). The gap worries many scientists because it renders one question inescapable: What

impact do we as scientists have? If one is to trust practitioner surveys on what kind of personnel selection procedures organizations use, then the answer seems to be: “not much”. A recent content analysis on whether I/O psychology research in the field’s two top journals (*Journal of Applied Psychology* and *Personnel Psychology*) addresses human-capital trends concludes (Cascio & Aguinis, 2008a, p. 1074): “I-O psychology will not be out front in influencing the debate on issues that are (or will be) of broad organizational and societal appeal”. Thus, it does not come as a surprise that the gap also worries practitioners (see Cohen, 2007; Shapiro et al., 2007), who rightly wonder why scientists do not address the issues that are truly relevant to them.

One way of reacting to the scientist-practitioner gap is to lament about the state of affairs and maybe even to call practitioners “stubborn” (Highhouse, 2008, p. 333). Another way is to study the reasons that lead organizations be so selective in their use of selection procedures (Latham, 2007; see also Kersting, in press), and this way is chosen here. Previous work (e.g., Harris, Dworkin, & Park, 1990) has studied only the willingness to use certain selection procedures (but never asked what procedures organizations actually use), and this only in a rather exploratory manner. The aim of this paper, however, is to examine the use and non-use of selection procedures, testing hypotheses derived from institutional theory.

### *Theoretical Background*

Institutional theory (e.g., DiMaggio & Powell, 1983; Meyer & Rowan, 1977; Oliver, 1991; Zucker, 1977; see also Heugens & Lander, 2009) focuses on explaining how rules, norms, cognitive schemata, and routines become established as guidelines for the behavior of organizations. For example, an important goal of institutional theorists is to explain why

different organizations that operate in the same environment become more similar over time – a phenomenon called isomorphism (e.g., DiMaggio & Powell, 1983; Meyer & Rowan, 1977).

Institutional theorists doubt that the behavior of organizations is predominantly a product of economic logic. Instead, they believe that organizations also act in certain ways to establish legitimacy. According to institutional theory (e.g., Oliver, 1991), the survival of organizations depends on their ability to achieve legitimacy, which is the endorsement of an organization (its means and ends) as valid, reasonable, and rational by social actors (Deephouse, 1996). If organizations try to legitimize their behavior by conforming to the norms, requirements, and myths of their environment, this can lead to increased prestige, attraction of personnel, access to resources, protection from public criticism and other rewards. For example, providing financial support to employees who use public transport to come to work instead of their cars can support the legitimacy of an organization because the organization is following the social norm of acting in an environmentally conscious way.

In her theoretical model, Klehe (2004) argued that the general predictions made by institutional theory can also be applied to the use of personnel selection procedures. If the use or non-use of selection procedures is considered to be one specific strategic decision an organization can make, then institutional theory should help to explain which procedures are used and which are not.

The idea that organizations try to achieve legitimacy has major implications for personnel selection because it predicts that legal considerations, applicant reactions, and the extent of diffusion of a procedure in the field should be important aspects for personnel selection, in addition to long and short-term financial considerations (Klehe, 2004). Furthermore (and extending the model of Klehe, 2004), institutional theory can also be used to derive the

hypothesis that organizations may consider the selection situation as an opportunity to promote themselves.

*Diffusion.* According to institutional theory, one important way to achieve legitimacy is to mimic other organizations. In situations of uncertainty, organizations can imitate other, more legitimate organizations and make similar strategic decisions. Imitation can lead to a situation in which certain rules or norms have spread so widely that they are taken for granted. In institutional theory, this is called mimetic pressure (see, e.g., Spell & Blum, 2005). As Klehe (2004) argued, such mimetic pressure should also affect the choice of selection procedures because organizations have many options regarding how to design their selection system, and thus, there is a considerable amount of uncertainty surrounding the decision of which procedures should be used. Of course, organizations could assess the academic literature to reduce this uncertainty, but research has shown that the academic literature is largely ignored (Colbert, Rynes, & Brown, 2005). Furthermore, readers are often skeptical of academic findings and frequently point to contradictions in the academic literature (Terpstra & Rozell, 1998). However, organizations can follow other organizations in terms of their method of selecting people and thus reduce their uncertainty in this way.

Empirically speaking, there is already some initial support for this idea. Williamson and Cable (2003) found that imitation contributes to explaining the hiring pattern of top management team members of Fortune 500 companies. Harris et al. (1990) showed that the number of other companies using a particular procedure is related to the willingness to use this procedure. Furthermore, the idea of mimetic pressure has also been applied to other HR decisions, as diffusion has been shown to explain why organizations establish workplace substance abuse programs (Spell & Blum, 2005). Thus, we hypothesize:

*H1: The more a selection procedure is perceived to be diffused in the field, the higher the likelihood that organizations will use it.*

*Legal considerations.* If organizations face legal claims against them, this could mean serious damage to the legitimacy of the organization, not only due to losing a case in court and having to pay money to the plaintiff, but also due to negative headlines in the newspapers. For example, several female Wal-Mart employees filed a class action suit against Wal-Mart because of sex discrimination (see, e.g., [www.walmartclass.com](http://www.walmartclass.com)). They claimed that Wal-Mart paid female workers less and gave them fewer promotions than men. This case has meant bad press for Wal-Mart worldwide (e.g., Clark, 2007; "Wal-Mart verliert eine Runde," 2007).

Legal considerations could also produce fear in organizations that the use of certain selection procedures may not be legally defensible (Klehe, 2004). In the US, legal aspects have had a profound effect on personnel selection practice (Myors et al., 2008), particularly due to the adoption of the Uniform Guidelines on Employee Selection Procedures by the Equal Employment Opportunity Commission, the Civil Service Commission, the Department of Labor, and the Department of Justice. Globalization has resulted in an export of important legal aspects in the US to other countries, at least for multinational companies (cf. Posthuma, Roehling, & Campion, 2006). Thus, we assume that legal considerations also play a role in countries where legal cases regarding the use of personnel selection procedures are relatively rare (Myors et al., 2008). Our hypothesis is as follows:

*H2: The higher the perceived legality of a selection procedure, the higher the likelihood that organizations will use it.*

*Applicant reactions.* Klehe (2004) also argued that legitimacy is affected by producing negative applicant reactions. If organizations use selection procedures that do not find

acceptance among job applicants, this can result in several negative effects: Applicants may refuse job offers, withdraw before receiving an offer, or raise complaints. The rise of research into applicant reactions worldwide (e.g., Anderson & Witvliet, 2008; Bertolino & Steiner, 2007; Hausknecht, Day, & Thomas, 2004; Nikolaou & Judge, 2007) shows that the importance of applicant reactions has been increasingly recognized in the academic literature. Consistent with this literature, we assume that the potential reactions of applicants matter for organizations, and we therefore hypothesize:

*H3: The more positive reactions a selection procedure is perceived to produce among applicants, the higher the likelihood that organizations will use it.*

*Organizational self-promotion.* Legitimacy concerns can also be addressed in a selection situation if organizations use this situation to promote themselves (Oliver, 1991; Rao, 2004). According to Oliver (1991), organizations seeking legitimacy can endeavor to manipulate the expectations held by other stakeholders by influencing these stakeholders via organizational self-promotion activities. Oliver (1991, p. 158) uses the example of a social service agency that “advertise[s] its ties to an influential charitable foundation in order to demonstrate to other potential public and corporate donors that it is deserving of resources and support”. Using the selection situation for self-promotion should be seen separately from preventing negative applicant reactions because (a) self-promotion means that organizations actively present positive information about themselves and (b) self-promotion may occur despite using a procedure that is perceived as unfair.

Personnel selection procedures may differ in the extent to which they enable the organization to promote itself. An unstructured interview may leave a great deal of room for the interviewer to praise organizational products and services and an organization’s conformance

with social norms (see Lievens & De Paepe, 2004). For example, if an organization had received negative headlines regarding waste disposal in the past, an interviewer could explain the organization's new environmentally friendly method of dealing with waste. However, inviting an applicant for a GMA test may not offer many opportunities for organizational self-promotion. As institutional theory assumes that such differences matter, we hypothesize:

*H4: The more a selection procedure is perceived to be useful for organizational self-promotion, the higher the likelihood that organizations will use this procedure.*

*Predictive validity.* Even though institutional theory focuses on the motive of achieving legitimacy, it does not negate that economic fitness is inarguably a major motive of all organizations (e.g., Oliver, 1991). Basically, organizations sell their products (e.g., machines or services) to make a profit and thus to ensure stability. The HR department supports this goal by offering services to the line management. One service they can offer is to select people who can generate profits. If organizations use personnel selection procedures that have predictive validity, then they help to achieve economic fitness (e.g., Schmidt, Hunter, Outerbridge, & Trattner, 1986). The goal of economic fitness should therefore be a pressure for organizations to use selection procedures that they perceive as valid. Again, past research has only addressed the willingness to use certain selection procedures (Harris et al., 1990), but not the actual use of selection procedures. Thus, we hypothesize:

*H5: The more valid a selection procedure is perceived to be by organizations, the higher the likelihood that organizations will use it.*

*Costs.* The long-term return from using valid selection procedures is only one side of the coin. The other side is the costs in terms of money and time that are involved when using certain

selection tools (Klehe, 2004). Such costs arise, for example, during the construction phase of a structured interview or because of the high number of assessors needed to conduct an AC.

Such costs are very likely to play an important role in the process of deciding which selection procedure to use. The gains that ultimately result from using highly valid procedures might be higher than the costs that occur up-front or during the use of these procedures – but the costs are experienced much earlier than the gains. And the earlier an experience occurs, the more decision weight it receives, as a great deal of research has shown (e.g., Frederick, Loewenstein, & O'Donoghue, 2002; Steel & König, 2006). Furthermore, this effect is intensified by the stakeholders' pressure for short-term financial performance of organizations (Harrell-Cook & Ferris, 1997). In empirical terms, evidence relating to costs has only been found regarding the willingness to use certain selection procedures, and costs seemed to matter only for some procedures and for some professions (Harris et al., 1990). However, we argue that costs should also be a predictor of the actual use of selection procedures, as our next hypothesis states:

*H6: The more costs a selection procedure yields, the lower the likelihood that organizations will use it.*

## *Methods*

### *Contextual Information*

This study was conducted in the German-speaking part of Switzerland, which is the largest part of Switzerland (63.7% of the Swiss population speak German as their mother tongue, Federal Statistical Office, 2006). The Swiss economy was thriving before the worldwide financial crisis, with the gross domestic product higher than in the larger Western European countries (Federal Statistical Office, 2006).

### *Organizations*

*Contact strategy.* The online survey was conducted with the help of HR Today, the leading monthly Swiss magazine for HR practitioners, and jobs.ch, the leading Internet job market site in Switzerland. HR Today has a mailing list for their weekly newsletter that is free for subscribers and nonsubscribers. At the time of the data collection, 3,668 people subscribed to the newsletter. HR Today allowed us to write an advance notice about the survey just before the data collection began. The site jobs.ch allows companies to advertise their job offers and belongs to the same holding as HR Today. At the time of the data collection, jobs.ch had the email addresses of 8,250 customers.

We received permission to send an email to all German-speaking HR Today newsletter subscribers and German-speaking jobs.ch customers. Although we were aware that many of the subscribers and customers would not be HR managers who know about an organization's personnel selection procedures (e.g., HR managers with a focus on HR development or administrative HR staff who are only responsible for advertising positions), filtering the email addresses was not technically possible. Thus, we sent an email to a total of 10,027 possible respondents listed either as HR Today newsletter subscribers, jobs.ch customers, or both.

We reiterated on the start page that the survey was for HR managers involved in personnel selection. This start page was visited by 2,346 people. Of these, 904 did not continue to the next page, 137 clicked on the option that said that they did not fit the desired profile of HR managers with knowledge about personnel selection, and 19 clicked on the option that allowed them to look at the survey without their responses being used for the analyses. Because the majority of participants ( $n = 336$ ) revealed either the organizational email address or the name of the organization, we checked whether organizations were mentioned more than once. Because

this was the case for 12 organizations, we randomly drew one person from each of these 12 organizations, which resulted in the exclusion of 15 participants. (Excluding also participants who neither mentioned an email address nor their organization's name as well as participants who used private addresses without mentioning the name of the organization did not qualitatively change the results. Analyses are available from the first author.) Ultimately, data from 506 HR managers were used.

*Descriptive information.* On average, the organizations surveyed had 1,059 employees in Switzerland ( $Md = 120$ ;  $SD = 3,971$ ) and 6,053 employees worldwide (including Switzerland) ( $Md = 182$ ;  $SD = 26,110$ ). The organizations were in various sectors, from consultancy (26%), machine/electrical industry (7.7%), computers/Internet (7.7%), governmental organizations (7.1%), finance industry (6.3%) to health and social services (5.9), and several other fields.

The gender composition of the respondents was nearly balanced (238 female, 261 male, 7 did not disclose their gender). The respondents' average age was 42.0 years ( $SD = 8.7$ ). On average, the respondents had been working in the HR field for 9.9 years ( $SD = 6.9$ ) and had been in their position for 5.6 years ( $SD = 5.2$ ). Managers had selected 22.4 people on average ( $Md = 14.0$ ;  $SD = 32.3$ ) in the last 18 months. Their educational background varied from a university degree (23.1%, mostly a business or psychology degree), a degree from a university of applied sciences ("Fachhochschule", 21.3%, predominantly a business degree), Swiss HR degrees that can be obtained without going to university ("eidgenössischer Personalleiter/in" and "eidgenössische/r Personalfachfrau/-mann", 32.4%) to only apprenticeship ("Lehre", 12.1%).

### *Survey*

The online survey was created with the Unipark software ([www.unipark.info](http://www.unipark.info)) and consisted of three parts. The first part was about the personnel selection procedures that

organizations had used. The second part consisted of questions regarding perceived attributes of used or non-used procedures. The descriptive information described above was based on answers to the question of the third part of the questionnaire. The survey ended with the option to receive a summary of the results. The whole survey was administered in German.

*Part 1: Which procedures are currently used in Switzerland?* In this part of the survey, respondents were asked to indicate the types of personnel selection procedures that they had used in the last 18 months. We offered a list of procedures (see Table 1) with a short explanation (e.g., “ability tests” such as “intelligence, concentration, cognitive and sensory abilities, etc.”). Respondents were able to click on all of the procedures they used. We also provided a free field in which respondents were able to write down additional procedures. As previous research in other European countries (Lievens & De Paepe, 2004; Schuler, Frier, & Kauffmann, 1993; Schuler et al., 2007) has shown that interviews are rarely highly structured, a question was also added asking how structured the interviews were. In particular, the low prevalence rates reported in Lievens and De Paepe (2004) suggested that practically nobody uses highly structured interviews. Thus, we decided to focus on semi-structured interviews. Our research design for the second part (see below) required us to define a boundary between semi-structured interviews and non-structured interviews. Based on Huffcutt and Arthur (1994) and Lievens and De Paepe (2004), the two criteria were (a) the a-priori determination of at least half of all questions and (b) an evaluation of candidates along a priori established criteria.

*Part 2: Reasons for or against using selection procedures.* This part focused on the perceived attributes of the procedures (the proposed predictors). The challenge for the second part was to design a short questionnaire that made responding as easy as possible for participants. We attempted to achieve this in the following three ways:

1. We focused only on five procedures: semi-structured interviews, ability tests, personality tests, ACs, and graphology. These were chosen (a) due to the variance in predictive validity (see, e.g., Schmidt & Hunter, 1998) and applicants' reactions to the procedures (Hausknecht et al., 2004) and (b) because of the expectation (based on studies such as Schuler et al., 1993) that certain procedures will be used by at least some organizations but not all of them (i.e., to obtain sufficient variance in the use).
2. Respondents were not required to rate the attributes of all five selection procedures. Instead, the online software was programmed in such a way that each respondent evaluated a maximum of four procedures: Up to two procedures that the respective organization had used and up to two that it had not used. If an organization had *used* more than two of the five selection procedures, two procedures were randomly chosen by the survey software. Similarly, if an organization had *not used* more than two of the five selection procedures, two procedures were also randomly chosen. If, for example, an organization had used only one out of these five selection procedures (say personality tests) but not the other four, two of the unused procedures were randomly chosen (say graphology and ACs) and the respondent thus answered items regarding personality tests, graphology, and ACs.
3. We asked only for two items per predictor variable, which is the smallest number of items needed to calculate Cronbach Alphas. This decision resulted in 14 items per selection procedure – a number that can easily fit on one webpage without respondents having to scroll downwards.

*Diffusion in the field* was measured with “Many companies that work in the same field use this procedure” and “This procedure is generally often used to select people.” *Legality* was measured with “This procedure is in conflict with legal requirements” (reverse coded) and “Using this procedure could have legal disadvantages if non-hired applicants complain” (reverse coded). *Applicant reactions* were measured with the following two items: “Typically, applicants react positively towards this procedure” and “This procedure is accepted by applicants” (see Hausknecht et al., 2004). *Organizational self-promotion* was measured with the following two items: “An organization can present itself favorably if it uses this procedure” and “I can advertise the organization if I use this procedure”. *Predictive validity* was measured with the following two items: “Applicants who perform well on this procedure will perform well on the job” and “This procedure measures the skills necessary to perform well on the job”. Finally, *costs* in terms of money and time were measured with “Using this procedure results in high costs” and “This procedure requires a great investment of time”. The self-creation of items was necessary due to the lack of preceding studies. To test the discriminant validity of our six predictor variables, we run confirmatory factor analyses (using AMOS 6, Arbuckle, 2005). Fit indices showed a good fit (Kline, 2005), as summarized in Table 1. Thus, our predictors seem to measure distinct constructs.

All items were answered on a five-point Likert scale (1 = strongly disagree to 5 = strongly agree), and respondents were told that we were interested in their personal beliefs about selection procedures. In case some respondents might be unfamiliar with a particular selection procedure, we added an option that led to a description of each of the five procedures (based on Hentze & Kammel, 2001, and Schuler, 1996). The survey was pre-tested with five HR managers and four HR researchers, who made several helpful suggestions regarding the wording of items.

## *Results*

### *Which procedures are currently used in Switzerland?*

The procedures currently used in Switzerland can be found in Table 2. Organizations used on average 4.74 procedures ( $SD = 1.60$ ). Eighteen organizations also used “on the job tryout days” (“Schnuppertage” in German) as an additional selection tool. In Switzerland, an on the job tryout day is typically an offer for potential applicants to become acquainted with a job by spending one day at work with a job incumbent. Even though organizations primarily use on the job tryout days for attracting applicants (i.e., as a recruitment tool), they often also use on the job tryout days to get to know applicants and may use this knowledge in the selection process. For example, if a potential applicant spent a day with a particular employee, this employee may be asked whether s/he thinks the applicant would fit to the job and the organization.

An inspection of Table 2 reveals that there is also a gap between the advice given by researchers like Schmidt and Hunter (1998) and the actual use of selection procedures in Switzerland. For example, ability tests, which are likely the procedure with the highest predictive validity, were used by 18.6% of the organizations, whereas graphology, which is most likely a procedure with only remote validity, was used by 15.8%.

### *Reasons for or against using selection procedures*

A repeated-measure design produces data with a nested structure (Misangyi, LePine, Algina, & Goeddeke, 2006), in our case because each informant rated the attributes of up to four selection procedures used or not used. In other words, the dependent variable (use vs. non-use) and the predictor variables (the perceived attributes of the procedures) are nested within participants. This means that we had run a multilevel analysis (Raudenbush & Bryk, 2001).

Because the dependent variable was dichotomous (use versus non-use of a selection procedure), the assumption of normality of the Level-1 residuals is not met, thus excluding standard multilevel regression analysis. As logistic regression is the alternative to ordinary least square regression if the dependent variable is dichotomous, the alternative to standard multilevel regression analysis is multilevel logistic regression, which is the analytic approach we used in this study (Raudenbush & Bryk, 2001; see also LePine, 2005). The computer program HLM (version 6.03, Raudenbush, Bryk, & Congdon, 2006) was used because HLM has the ability to cope with missing data (Misangyi et al., 2006), which occurred because of the research design (up to four selection procedures were randomly chosen). Because all six predictors were attributes of selection procedures (instead of attributes of respondents), they were entered on Level 1 (the lower level).

Table 3 reports the descriptive statistics and correlations for the average personnel selection (i.e., first we computed all means, standard deviations, and correlations for each individual selection procedure and then we averaged these parameters). Interestingly, this table shows an only modest correlation (.26) between perceived predictive validity and the use vs. non-use of selection procedures as compared to equal or higher *r*s for perceived costs, diffusion, and applicant reactions – a finding that can be taken as a first sign that predictors other than predictive validity are also important.

The results of the multilevel logistic regression are presented in Table 4. As can be seen, all predictors became significant, as predicted, but their odds ratios varied to a great extent. Large odds ratios were found for applicant reactions (odds ratio = 3.11,  $p < .001$ ) diffusion (odds ratio = 2.39,  $p < .001$ ), and costs (odds ratio = 0.33,  $p < .001$ ). (If costs were reverse-coded, it would have an odds ratio of 3.03.) The other variables had relatively small odds ratios: predictive

validity had an odds ratio of 1.60 ( $p < .01$ ), organizational self-promotion an odds ratio of 1.35 ( $p < .05$ ), and perceived legality an odds ratio of 1.24 ( $p < .05$ ).

### *Discussion*

The gap between what scientists say and what practitioners do has become a hotly debated topic, particularly with reference to personnel selection (e.g., Cascio & Aguinis, 2008a; Rynes et al., 2007). This study answers the call by Latham (2007, p. 1028) to “conduct research on the adoption and diffusion of human resource research findings in the workplace.” The results show that perceived predictive validity, the focus of a great deal of research, was a significant predictor of whether or not organizations use personnel selection procedures. However, it only seems to play a modest role. Assumed applicant reactions, the costs involved, and the extent of diffusion in the field were the main predictors. Legal aspects and organizational self-promotion were also significant predictors, but the odds ratios appeared to be small.

The importance of the non-economic predictors (applicant reactions, diffusion in the field, legal aspects, and organizational self-promotion) underscores the central tenet of institutional theory that organizations strive to achieve legitimacy. Thus, the use and non-use of selection procedures can apparently not be explained by referring to economic parameters like costs (as the short-term aspect) and validity (as the long-term aspect) alone. Furthermore, the results highlight the usefulness of institutional theory for understanding the adoption and diffusion of human resource practices (see Klehe, 2004).

The finding that the way in which applicants react to a personnel selection procedure had the highest odds ratio in the logistic regression points to an interesting paradox. On the one hand, applicant reaction research has only found limited support for the idea that having negative views

of the selection procedure leads people to self-select out (Ryan, Sacco, McFarland, & Kriska, 2000). Furthermore, making a selection procedure fairer does not reduce turnover (Truxillo, Bauer, Campion, & Paronto, 2002). Thus, the behavioral consequences of applicant reactions seem to be “meager and disappointing” (Sackett & Lievens, 2008, p. 438). On the other hand, organizations apparently care to a considerable degree whether their selection procedures are perceived as fair or not, as our results suggest. In other words, organizations seem to be unnecessarily anxious.

According to our results, the predictive validity that is attributed to a selection procedure is of relatively little importance to practitioners when deciding to use or not to use a selection procedure. In view of all the years of research focusing on predictive validity, this can be considered to be a disappointing finding. Indeed, the idea of “the very separate worlds of academic[s] and practitioner[s]” (Rynes et al., 2007, p. 987; see also Cascio & Aguinis, 2008a) seems to be more than supported by this study. It should be noted, however, that we measured perceived predictive validity and not the predictive validity established by meta-analysis, and previous research has shown that practitioners’ assumptions about personnel selection procedures do not always match with what the scientists say (Rynes, Colbert, & Brown, 2002).

Legal considerations played only a minor role for the using or not using personnel selection procedures. This is consistent with the conclusion of Myers et al. (2008, p. 242) that in “only a few countries (Canada, South Africa, United States) is the legal environment seen as having a large effect on I–O psychology”, whereas the legal pressure in other countries (including Switzerland) is described as low. This may also explain why perceived legality and diffusion into the field were not correlated.

In addition, this study gives an overview of the situation of personnel selection in the German-speaking part of Switzerland. Nearly all organizations analyzed applicants' documents, conducted interviews (mostly semi-structured ones), and checked references. Personality tests, ACs, work sample tests, and records of criminal history were used by around a quarter of the organizations. Ability tests were used by less than one in five organizations, only slightly more often than graphology. Biographical questionnaires were used even less often. Altogether, this shows that there is clearly a gap between academic recommendations and organizational practices in Switzerland, as has been found for other countries (e.g., Lievens & De Paepe, 2004; Ryan et al., 1999; Schuler et al., 2007; Taylor et al., 2002). However, the results of this study should be considered with the caveat in mind that the study used a large but not necessarily representative sample of organizations.

An interesting additional finding was that several organizations mentioned on the job tryout days as a selection tool. Even though such days are typically a tool to make less known jobs better known and to attract potential applicants, at least some organizations seem to use these tryout days also to (informally) get a first impression of applicants. Even though we do not know much about this procedure, it may have the advantage that it suffers less from the thin-slices-of-behavior limitation than other, more commonly used and researched procedure. This limitation (Cascio & Aguinis, 2008b) stems from the fact that only a limited number of behaviors are observed in a few situations in most selection procedures. Thus, more research on the job tryout days and their role in selection might offer interesting insights.

Three limitations should be mentioned. First, the reliabilities of all scales, although acceptable, were relatively low, which is most likely a consequence of the fact that only two items per scale were used. Thus, the low reliabilities are the trade-off from the goal of making

the questionnaire as short as possible, as we were interested in obtaining a large sample. However, because the reliabilities of all scales are comparatively low, it would be unreasonable to assume that the pattern of results would have changed: The pattern would have been stronger but probably not qualitatively different.

Second, this study focused on the use versus non-use of personnel selection procedures as the only dependent variable. Even though this is a very important variable given the gap between academic recommendation and the diverging behavior of practitioners (e.g., Rynes et al., 2007), Klehe (2004) has pointed out that organizations can also react to institutional pressures by means other than using (versus not using) a procedure. They could, for example, also try to influence public opinion by making the reason for their choice of selection procedures explicit on their online recruitment page. Thus, institutional theory offers many more opportunities for future personnel selection research.

Third, the study used a cross-sectional design that cannot establish causality. Even though we used institutional theory to build our arguments as to why certain variables should predict the use versus non-use of selection procedures, and despite the fact that the strong theoretical foundation (an extension of Klehe, 2004) is certainly a strength of the study, these arguments can only suggest that causality flows this way.

Regarding future research, the current research could be extended by incorporating differences between industry sectors. For example, researchers could try to oversample public sector organizations and compare them to a matched sample of organization from other sectors to test the Klehe's (2004) idea that selection procedures are particularly often used when the procedures are legally defensive and the organization is dependent on fulfilling legal regulations (i.e., from the public sector). Furthermore, future research could also whether examine selection

procedures are differently perceived depending on the respondents' level in an organizational hierarchy. Such research would be particularly interesting if HR professionals on a lower hierarchical level feel that the constraints imposed by their supervisors force them to select people in a way that is not consistent with their own beliefs (e.g., by providing too little budget for the development and validation of better selection procedures).

This study has important implications for anybody who is interested in changing personnel selection into a field in which more valid procedures are used, as our findings imply that it may be useful to be aware that organizations care about more aspects than only predictive validity. Keeping this in mind could be important for consultants who are asked to design a new selection process for an organization, vendors who wish to sell tests, or academics who are asked to advise an organization regarding its personnel selection. For example, it may be useful to talk about legal issues in a manual for a personality test. At the same time, it might be a fruitful strategy to adapt selection procedures in a way that increases attributes like positive applicant reactions without impairing their predictive validity (for an example, see Klingner & Schuler, 2004).

### *Conclusion*

This article began with the idea that organizations could rely on Schmidt and Hunter's (1998) famous table when deciding upon which selection procedures to use. Clearly, that is not what organizations in this sample did. Our results suggest that predictive validity (the focus of Schmidt and Hunter) is only one (and only a relatively minor) factor when predicting whether or not an organization uses a particular selection procedure. As can be deduced from institutional theory, there are several other reasons why organizations are selective when they choose their

selection procedure, most prominently among them the perceived acceptance of the procedure by the applicants, its costs, and its diffusion in the field.

More generally, this study contributes to scientist-practitioner gap. Whereas previous studies have primarily documented this gap, particularly in the field of personnel selection (e.g., Cascio & Aguinis, 2008a), we have applied a theory from a different field (i.e., institutional theory) to better to understand this gap. However, more research that helps understanding this gap is needed. Thus, we repeat the call for more research on the scientist-practitioner gap (e.g., Latham, 2007). Especially if it is true that the current research on personnel selection is close to reaching a plateau because even the best combinations of uncorrected predictors do not explain more than a modest amount of variance (Cascio & Aguinis, 2008b), it may be particularly important that personnel selection research moves on to other question than just focusing on explaining a little bit more predictive validity.

## References

- 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., Herriot, P., & Hodgkinson, G. P. (2001). The practitioner-researcher divide in industrial, work and organizational (IWO) psychology: Where we are now, and where do we go from here? *Journal of Occupational and Organizational Psychology*, *74*, 391-411.
- Anderson, N., & 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.
- Arbuckle, J. L. (2005). Amos 6.0 [Computer software]. Spring House, PA: Amos Development Corporation.
- Bertolino, M., & Steiner, D. D. (2007). Fairness reactions to selection methods: An Italian study. *International Journal of Selection and Assessment*, *15*, 197-205.
- Cascio, W. F., & Aguinis, H. (2008a). Industrial and Organizational Psychology 1963-2007: Changes, choices, and trends. *Journal of Applied Psychology*, *93*, 1062-1081.
- Cascio, W. F., & Aguinis, H. (2008b). Staffing twenty-first-century organizations. *Academy of Management Annals*, *2*, 133-165.
- Cheung, G. W., & Rensvold, R. B. (2002). Evaluating goodness-of-fit indexes for testing measurement invariance. *Structural Equation Modeling*, *9*, 233 - 255.
- Clark, A. (2007, May 1). Security cameras and HQ squads: Union-busting at Wal-Mart. *The Guardian*, p. 23.

- Cohen, D. J. (2007). The very separate worlds of academic and practitioner publications in human resource management: Reasons for the divide and concrete solutions for bridging the gap. *Academy of Management Journal*, *50*, 1013-1019.
- Colbert, A. E., Rynes, S. L., & Brown, K. G. (2005). Who believes us? Understanding managers' agreement with human resource research findings. *Journal of Applied Behavioral Science*, *41*, 304-325.
- Deadrick, D. L., & Gibson, P. A. (2007). An examination of the research-practice gap in HR: Comparing topics of interest to HR academics and HR professionals. *Human Resource Management Review*, *17*, 131-139.
- Dean, G. A. (1992). The bottom line: Effect size. In B. L. Beyerstein & D. F. Beyerstein (Eds.), *The write stuff: Evaluations of graphology, the study of handwriting analysis* (pp. 269-341). Buffalo, NY: Prometheus.
- Deephouse, D. L. (1996). Does isomorphism legitimate? *Academy of Management Journal*, *39*, 1024-1039.
- Di Milia, L. (2004). Australian management selection practices: Closing the gap between research findings and practice. *Asia Pacific Journal of Human Resources*, *42*, 214-228.
- Dillon, W. R., Kumar, A., & Mulani, N. (1987). Offending estimates in covariance structure analysis: Comments on the causes of and solutions to Heywood cases. *Psychological Bulletin*, *101*, 126-135.
- DiMaggio, P. J., & Powell, W. W. (1983). The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *American Sociological Review*, *48*, 147-160.

- Drenth, P. J. D. (2008). Psychology: Is it applied enough? *Applied Psychology: An International Review*, 57, 524-540.
- Federal Statistical Office. (2006). *Statistical data on Switzerland 2006*. Neuchâtel, Switzerland: Author.
- Frederick, S., Loewenstein, G., & O'Donoghue, T. (2002). Time discounting: A critical review. *Journal of Economic Literature*, 40, 351-401.
- Hair, J. F., Jr., Anderson, R. E., Tatham, R. L., & Black, W. C. (1998). *Multivariate data analysis*. Englewood Cliffs, NJ: Prentice-Hall.
- Harrell-Cook, G., & Ferris, G. R. (1997). Competing pressures for human resource investment. *Human Resource Management Review*, 7, 317-340.
- Harris, M. M., Dworkin, J. B., & Park, J. (1990). Preemployment screening procedures: How human resource managers perceive them. *Journal of Business and Psychology*, 4, 279-292.
- Hausknecht, J. P., Day, D. V., & Thomas, S. C. (2004). Applicant reactions to selection procedures: An updated model and meta-analysis. *Personnel Psychology*, 57, 639-683.
- Hentze, J., & Kammel, A. (2001). *Personalwirtschaftslehre [Personnel management]*. Bern, Switzerland: Haupt.
- Heugens, P. P. M. A. R., & Lander, M. W. (2009). Structure! Agency! (And other quarrels): Meta-analyzing institutional theories of organization. *Academy of Management Journal*, 52, 61-86.
- Highhouse, S. (2008). Stubborn reliance on intuition and subjectivity in employee selection. *Industrial and Organizational Psychology: Perspectives on Science and Practice*, 1, 333-342.

- Huffcutt, A. I., & Arthur, W., Jr. (1994). Hunter and Hunter (1984) revisited: Interview validity for entry-level jobs. *Journal of Applied Psychology, 79*, 184–190.
- Kersting, M. (in press). DIN 33430: Akzeptanz durch Qualität, Initiative und Geduld [DIN 33430: Acceptance through quality, initiative, and patience]. *Zeitschrift für Personalpsychologie*.
- Klehe, U.-C. (2004). Choosing how to choose: Institutional pressures affecting the adoption of personnel selection procedures. *International Journal of Selection and Assessment, 12*, 327-342.
- Kline, R. B. (2005). *Principles and practice of structural equation modeling* (2nd ed.). New York: Guilford Press.
- Klingner, Y., & Schuler, H. (2004). Improving participants' evaluations while maintaining validity by a work sample-intelligence test hybrid. *International Journal of Selection and Assessment, 12*, 120-134.
- Latham, G. P. (2007). A speculative perspective on the transfer of behavioral science findings to the workplace: "The times they are a-changin'". *Academy of Management Journal, 50*, 1027-1032.
- LePine, J. A. (2005). Adaptation of teams in response to unforeseen change: Effects of goal difficulty and team composition in terms of cognitive ability and goal orientation. *Journal of Applied Psychology, 90*, 1153-1167.
- Lievens, F., & 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.

- Meyer, J. W., & Rowan, B. (1977). Institutionalized organizations: Formal structure as myth and ceremony. *American Journal of Sociology*, *83*, 340-363.
- Misangyi, V. F., LePine, J. A., Algina, J., & Goeddeke, F., Jr. (2006). The adequacy of repeated-measures regression for multilevel research: comparisons with repeated-measures ANOVA, multivariate repeated-measures ANOVA, and multilevel modeling across various multilevel research designs. *Organizational Research Methods*, *9*, 5-28.
- Myors, B., Lievens, F., Schollaert, E., Hoye, G. V., Cronshaw, S. F., Mladinic, A., et al. (2008). International perspectives on the legal environment for selection. *Industrial and Organizational Psychology: Perspectives on Science and Practice*, *1*, 206–246.
- Neter, E., & Ben-Shakhar, G. (1989). The predictive validity of graphological inferences: A meta-analytic approach. *Personality and Individual Differences*, *10*, 737-745.
- Nikolaou, I., & 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.
- Oliver, C. (1991). Strategic responses to institutional processes. *Academy of Management Review*, *16*, 241-265.
- Posthuma, R. A., Roehling, M. V., & Campion, M. A. (2006). Applying U.S. employment discrimination laws to international employers: Advice for scientists and practitioners. *Personnel Psychology*, *59*, 705-739.
- Rao, H. (2004). Institutional activism in the early American automobile industry. *Journal of Business Venturing*, *19*, 359-384.
- Raudenbush, S. W., & Bryk, A. S. (2001). *Hierarchical linear models: Applications and data analysis methods* (2nd ed.). Thousand Oaks, CA: Sage.

- Raudenbush, S. W., Bryk, A. S., & Congdon, R. T., Jr. (2006). HLM6.03: Hierarchical linear and nonlinear modeling [Computer software]. Chicago, IL: Scientific Software International.
- Ryan, A. M., McFarland, L., Baron, H., & Page, R. (1999). An international look at selection practices: Nation and culture as explanations for variability in practice. *Personnel Psychology, 52*, 359-391.
- Ryan, A. M., Sacco, J. M., McFarland, L. A., & Kriska, S. D. (2000). Applicant self-selection: Correlates of withdrawal from a multiple hurdle process. *Journal of Applied Psychology, 85*, 163-179.
- Rynes, S. L., Bartunek, J. M., & Daft, R. L. (2001). Across the great divide: Knowledge creation and transfer between practitioners and academics. *Academy of Management Journal, 44*, 340-355.
- Rynes, S. L., Colbert, A. E., & Brown, K. G. (2002). HR professionals' beliefs about effective human resource practices: Correspondence between research and practice. *Human Resource Management, 41*, 149-174.
- Rynes, S. L., Giluk, T. L., & Brown, K. G. (2007). The very separate worlds of academic and practitioner periodicals in human resource management: Implications for evidence-based management. *Academy of Management Journal, 50*, 987-1008.
- Sackett, P. R., & Lievens, F. (2008). Personnel selection. *Annual Review of Psychology, 59*, 419-450.
- 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.

- Schmidt, F. L., Hunter, J. E., Outerbridge, A. N., & Trattner, M. H. (1986). The economic impact of job selection methods on size, productivity, and payroll costs of the federal work force: An empirically based demonstration. *Personnel Psychology, 39*, 1-29.
- Scholarios, D., & Lockyer, C. (1999). Recruiting and selecting professionals: Context, qualities and methods. *International Journal of Selection and Assessment, 7*, 142-156.
- Schuler, H. (1996). *Psychologische Personalauswahl. Einführung in die Berufseignungsdiagnostik [Psychological personnel selection: An introduction into how to diagnose occupational aptitude]*. Göttingen, Germany: Verlag für Angewandte Psychologie.
- Schuler, H., Frier, D., & Kauffmann, M. (1993). *Personalauswahl im europäischen Vergleich [Personnel selection in a European comparison]*. Göttingen, Germany: Hogrefe.
- Schuler, H., Hell, B., Trapmann, S., Schaar, H., & Boramir, I. (2007). Die Nutzung psychologischer Verfahren der externen Personalauswahl in deutschen Unternehmen - ein Vergleich über 20 Jahre [Use of personnel selection instruments in German organizations in the last 20 years]. *Zeitschrift für Personalpsychologie, 6*, 60-70.
- Shapiro, D. L., Kirkman, B. L., & Courtney, H. G. (2007). Perceived causes and solutions of the translation problem in management research. *Academy of Management Journal, 50*, 249-266.
- Spell, C. S., & Blum, T. C. (2005). Adoption of workplace substance abuse prevention programs: Strategic choice and institutional perspectives. *Academy of Management Journal, 48*, 1125-1142.
- Spini, D. (2003). Measurement equivalence of 10 value types from the Schwartz Value Survey across 21 countries. *Journal of Cross-Cultural Psychology, 34*, 3-23.

- Steel, P. D., & König, C. J. (2006). Integrating theories of motivation. *Academy of Management Review, 31*, 889-913.
- Taylor, P., Keelty, Y., & McDonnell, B. (2002). Evolving personnel selection practices in New Zealand organisations and recruitment firms. *New Zealand Journal of Psychology, 31*, 8-18.
- Terpstra, D. E., & Rozell, E. J. (1998). Human resource executives' perceptions of academic research. *Journal of Business and Psychology, 13*, 19-29.
- Truxillo, D. M., Bauer, T. N., Campion, M. A., & Paronto, M. E. (2002). Selection fairness information and applicant reactions: A longitudinal field study. *Journal of Applied Psychology, 87*, 1020-1031.
- Van de Ven, A. H., & Johnson, P. E. (2006). Knowledge for theory and practice. *Academy of Management Review, 31*, 802-821.
- Walker, A. G. (2008). Maximizing journal impact: Moving from inspections of topics to scans for techniques, populations and actions. *Journal of Occupational and Organizational Psychology, 81*, 1-10.
- Wal-Mart verliert eine Runde: Sammelklage-Status in dem grossen Diskriminierungsstreit bestätigt [Wal-Mart loses a round: Class-action status in the large discrimination lawsuit affirmed]. (2007, Feb 8). *Neue Zürcher Zeitung*, p. 25.
- Williamson, I. O., & Cable, D. M. (2003). Organizational hiring patterns, interfirm network ties, and interorganizational imitation. *Academy of Management Journal, 46*, 349-358.
- Zucker, L. G. (1977). Role of institutionalization in cultural persistence. *American Sociological Review, 42*, 726-743.

Table 1

*Confirmatory Factor Analyses*

	<i>n</i>	$\chi^2$	<i>df</i>	<i>p</i>	CFI	NFI	IFI	RMSEA
Separate analysis for each selection								
procedure								
Semi-structured interviews	386	81.18	39	<.01	.96	.93	.96	.05
Graphology	259	42.27	39	.32	.99	.99	.99	.02
Personality tests	238	60.24	39	<.05	.98	.95	.98	.05
Mental ability tests	230	49.95	39	.11	.99	.95	.99	.04
Assessment centers (AC) <sup>a</sup>	207	56.39	40	<.05	.98	.92	.98	.05
Measurement equivalence								
Configural invariance <sup>b</sup>	1320	290.34	196	<.01	.98	.94	.98	.02
Metric invariance <sup>c</sup>	1320	351.26	220	<.01	.97 <sup>d</sup>	.93	.97	.02
Measurement equivalence without								
AC <sup>e</sup>								
Configural invariance <sup>b</sup>	1113	234.47	159	<.01	.98	.95	.98	.02
Metric invariance <sup>c</sup>	1113	253.85	175	<.01	.98 <sup>d</sup>	.94	.98	.02

*Note.* CFI = Comparative Fit Index, NFI = Normed Fit Index, IFI = Incremental Fit Index,

RMSEA = root mean square error of approximation.

<sup>a</sup> When analyzing the AC data, an Heywood case was encountered, as the second cost item had a negative variance, which is the most common type of improper solutions (cf. Dillon, Kumar, & Mulani, 1987). This can be remedied by fixing the offending error variances to a very small positive value (i.e., 0.001), which is consistent with the commonsense belief that virtually all empirical data have at least some random error (Hair, Anderson, Tatham, & Black, 1998).

<sup>b</sup> Configural invariance = within each selection procedure, the same subsets of items are associated with the same constructs

<sup>c</sup> Metric invariance = all factor loading parameters are equal across selection procedures

<sup>d</sup> In measurement equivalence research (Cheung & Rensvold, 2002), a  $\Delta$ CFI smaller of .01 indicates that the null hypothesis of invariance between the configural invariance model and the

metric invariance model should not be rejected, which was the case for the measurement equivalence analyses with ( $\Delta\text{CFI} = .007$ ) and without the AC data ( $\Delta\text{CFI} = .001$ ).

<sup>e</sup> An alternative way of dealing with a Heywood case (e.g., Spini, 2003) is to exclude the sample in which the Heywood case appeared.

Table 2

*Personnel Selection Procedures used in German-Speaking Switzerland*

Procedure	Percentage
Analysis of application documents (including CV and university/school reports)	99.6%
Interviews (with 71.3% of these being at least semi-structured)	99.4%
Reference checks	89.1%
Personality test	32.0%
Assessment Centers (AC)	26.3%
Work sample tests	23.5%
Records of criminal history	23.1%
Ability tests	18.6%
Graphology	15.8%
Biographical questionnaires	12.7%
Presentation exercises (not as an AC component)	11.3%
Medical examinations	5.3%
Role-plays (not as an AC component)	4.5%

*Note.*  $N = 506$ .

Table 3

*Means, Standard Deviations, and Correlations among Study Variables for the Average*

*Personnel Selection Procedure*

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6
1. Diffusion in the field	2.87	0.82	<i>.66</i>					
2. Legality	4.15	0.85	.01	<i>.67</i>				
3. Applicant reactions	3.22	0.85	.34	.25	<i>.83</i>			
4. Organizational self-promotion	2.73	0.94	.26	.03	.52	<i>.83</i>		
5. Predictive validity	3.15	0.80	.24	.10	.44	.46	<i>.70</i>	
6. Costs	3.37	0.89	.02	-.16	-.09	.13	.03	<i>.67</i>
7. Use versus non-use	0.31	0.35	.24	.17	.37	.19	.26	-.24

*Note.* Average Cronbach alpha in italics in the diagonal. Total  $N = 506$ . |Correlations|  $> .09$  are

significant at  $p < .05$ , |correlations|  $> .12$  at  $p < .01$ . Use versus non-use codes as 1 = use and 0 = nonuse.

Table 4

*Multilevel Logistic Regression Results*

Variable	Coefficient	SE	T-ratio	Odds ratio (with 95% Confidence Interval)
1. Diffusion in the field	0.87	0.11	8.04***	2.39 (1.93, 2.95)
2. Legality	0.21	0.10	2.06*	1.24 (1.01, 1.52)
3. Applicant reactions	1.14	0.15	7.68***	3.11 (2.33, 4.16)
4. Organizational self-promotion	0.30	0.11	2.81*	1.35 (1.09, 1.66)
5. Predictive validity	0.47	0.13	3.57**	1.60 (1.24, 2.07)
6. Costs	-1.10	0.11	-9.93***	0.33 (0.27, 0.42)

Note.  $N_{Level\ 2} = 500$ ;  $N_{Level\ 1} = 1400$ . All predictors were entered after grand-mean centering. The

variance component of the intercept was .0012 ( $\chi^2 = 567.2$ ,  $p < .05$ ).

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .