# 3 Rational-analytical quality in selecting and hiring candidates

Neither the best personnel selection procedures nor the most experienced decision-makers can guarantee the right personnel selection. Consequently, miscasts cannot be avoided entirely. However, avoiding them would be desirable for economic and social reasons. On the company side, poor selection decisions are associated with early turnover and fluctuation costs, and on the employee side, with being under- or over-challenged, not feeling well, stressed, and so on (Melchers, 2017, p. 1). A right decision regarding the position to be filled is key to the success of the organization and the employees. Consequently, the quality of personnel diagnostics is of central importance (Kersting & Püttner, 2018, p. 3).

To define what is meant by quality in personnel selection, it is necessary to have a uniform concept of quality and, thus, a consistent definition.

But what is understood by "quality," and how the term is defined varies not only in theory and practice but also in different cultures, and possibly from person to person and situation to situation. Quality means different things to different people; indeed, the same person may adopt different conceptualizations, at different moments. This raises the issue of "whose quality?" (Harvey & Green, 1993, p. 9).

In principle, quality can be understood as the degree to which a procedure satisfies specific requirement criteria. Therefore, in science, requirement criteria of the quality of personnel selection have been developed; these criteria correspond to the psychometric paradigm and, thus, to the rational-analytical procedures.

> Many researchers view rational-analytical decision-making as the contrast to intuitive decision-making. For example, Dane & Pratt (2012) state that "analytical decision making is highly dissimilar to intuition in that analytical approaches involve the use of systematic procedures designed to thoroughly assess all pertinent information, evaluate costs and benefits, and invoke conscious deliberation" (p. 4). But Dörfler & Ackermann (2012, p. 559) note critically using non-intuitive as opposed to intuitive rather than analytical, to avoid misunderstandings and contradictions.

Rational-analytical decision-making is conscious, slow, and systematic information processing by making logical connections that result in a reasoned judgment (Soffner, 2021, p. 19). Rational-analytical selection procedures are based on research and try to exclude intuitions and emotions as sources of error. An increase in the quality of personnel selection is to be achieved by adhering to scientific standards such as validity, reliability, or objectivity.

The rational-analytical procedures of judgment and decision-making in personnel diagnostics and hiring candidates are primarily oriented towards the use of reasoned, thoughtful, and structured reflection. These decision-making procedures are systematically and consciously reflected upon and controlled by mental activities. They are based on collecting, analyzing, and interpreting information, consciously


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calculating the pros and cons, and choosing what appears to be the best outcome. Particularly in selection processes, a rational-analytical approach is oriented to clear rules, standards, and/or guidelines. As Sadler-Smith (2010, p. 11) writes: "The analytical mind is the rule maker and rule follower."

How practitioners define quality in selection varies from manager to manager and company to company and is, often, very subjective. Practitioners define quality differently, based on varying experiences, resources, needs, contexts, and objectives. On the one hand, there is a scientifically oriented definition of quality in personnel diagnostics, in practice. On the other hand, our empirical research shows that quality in personnel selection is not clearly defined for most interviewed managers and companies.

However, research suggests that our interview partners agree that quality in selection and hiring processes should not be defined subjectively. The ISO 8402–1986 standard defines quality as "the totality of features and characteristics of a product or service that bear upon its ability to satisfy stated or implied needs."

Like the quality of products, the quality of a selection procedure can be determined not only by the results but also by the process. Quality begins with the creation of a product, the manufacturing process. Therefore, errors or defects in the personnel diagnostic process inevitably lead to defects in the product or result (Schmidt-Atzert & Amelang, 2012, p. 130). But it should also be noted that "unfortunately, no matter how good a selection system is, it cannot correct problems of poor supervision, inadequate training, lack of proper equipment, or inconsistent performance management" (Ryan & Tippins, 2009, p. 33).

The primary need or goal of selection and hiring processes is selecting and hiring the most suitable candidates. To determine and hire (or promote) the most qualified candidates, it is helpful to differentiate between quality in selection (process) and quality in hiring or promotion (result). Thus, the criteria for quality in hiring or promotion (result) and quality selection (process) should be clearly defined.

## 3.1 Quality of hire

The rational-analytical or psychometric perspective on quality in selection processes meets scientific quality criteria such as objectivity, reliability, and validity. A selection decision should be based on evident selection results.

The quality of hire can be defined and evaluated by the new hire's performance and the fulfillment of the required competencies for the job specification. Thus, the quality of hire can be seen in the effectiveness of the hiring process; this means that from the available candidates, the most suitable candidate, who, most likely, would make the best contribution to the organizational success, is selected. In addition, this quality of hire or promotion can be measured by metrics such as early fluctuation rate, productivity, and other performance criteria.

The quality of hire can also be measured by the satisfaction of the employee's manager with the new employee or the job satisfaction of the new employee, the support of his colleagues and manager, the retention rate, career development, and so on. Quality, in this perspective, means fulfilling the specific customer or user requirements. In essence, this is what is meant by predictive validity. Predictive or criterion validity describes how a selection process effectively estimates a candidate's performance, based on a few outcome measures; for instance, the outcome measure, or criterion, the performance of the candidate, is the primary variable of interest in this analysis, because the score in the selection process (construct) is correlated to the role success (criterion).

The main goal of personnel selection is to predict who will be successful and perform well on the job. Measurable and operationalizable success factors are required to determine success or good performance. Therefore, HR professionals or hiring managers need to answer the following questions:

1. What are the success criteria and performance outcomes for the job/specific position or a global leader? In the literature and organizations, different criteria for success are mentioned. However, success criteria are not uniform, consistent, or standardized: possible examples are results of performance appraisals (by executives, supervisors, customers, peers, etc.), performance measurements, for example, reaching goals, career or salary developments, and personal satisfaction.
2. What are the predictors of success, for example, adaptability or good performance on the job, and in that organization? Which competencies/behaviors are necessary to perform that job? Are there further predictors, for example, support by a spouse?
   - There are different predictors for success as a global leader. Mesmer-Magnus & Viswesvaran (2008) distinguish in their research on expatriate selection between
   - Person-related predictors (competencies, expectations, maturity, willingness to move, etc.) Job-related predictors (technical knowledge, qualifications, work, leadership and international experience, language skills, availability, etc.)
   - Non-work-related predictors (support by family, health status, country-specific and cultural requirements, such as standard of living, environment, safety, social security, medical care, cultural offerings, and religion)
3. How can the predictors of interest be measured in the selection process? What are the best selection techniques and methods to measure the predictors?
4. How will the information collected be analyzed, combined, and interpreted to make the selection decision? Must scaled behavioral anchors and numerical evaluation sheets be used?

Some of our interviewed HR managers made it clear that the quality of a selection procedure depends only on the quality of the hire or promotion. Practitioners told us in this context that in the end, it does not matter how the candidate was selected, as long as the results are positive (performance on the role). Here, the concept of quality of selection is only seen from a result-oriented perspective; this leaves room for intuition in the process of selection.

An interviewed HR manager from a global organization said:

> In the end, it's the result that counts. Quality is shown in the fact that we've hired the right people. This is particularly evident in whether they perform or not. How the selection process was designed is rather irrelevant. But, of course, we must evaluate whether someone is successful. And if not, we have to check why. This may be because the selection process went badly. But, poor performance can also be due to something completely different.

In a similar vein, the head of a large personnel consultancy in England argues:

> As long as I'm successful and get positive feedback from my clients, I don't need the confirmation of science that I have done everything right from a scientific point of view. I need confirmation from my clients. The customer determines good quality in personnel selection, not the science. Quality is what the clients want. And if they are happy with the selected candidates and the candidates perform, I know I did a good job.

Defining quality from the customer's perspective is a widespread practice and, at the same time, an expression of a certain kind of rationality. Moreover, it reflects agreement on quality in selection between the customer and the hiring manager.

## 3.2 Quality of personnel selection

The quality of the hiring decision is measured, in particular, by the later performance of the new hire. However, employee performance is influenced by various factors, on which the selection process cannot have any influence, for example, leadership by the supervisor and feeling comfortable in the team. Thus, the hire's performance and the fulfillment of the required competencies cannot be the only quality criteria. Since we cannot predict what will happen after hiring and employing a candidate, it is essential to raise the quality of the selection decision to the best possible level, before the influence of everything else affects the candidate's subsequent performance. Thus, the quality of the selection decision must also be assessed at the time of the decision process. This is why the quality of the selection process is so important. In this way, a good starting position should be created, on which the onboarding process and making the newly hired employee successful can then be built.

A rational-analytical decision-making style is based on precise, structured, and systematic analysis and encompasses conscious and well-calculated judgments. The rational-analytical selection decision should be based on specific steps of

selection, comprehensible facts, and transparent assessment criteria. In this way, a selection decision can be understood by others. Rational decision-making presumes that available information enables the decision-maker to settle for the best possible alternative.

Research clearly shows a close connection between the quality of selection (from a scientific perspective) and the quality of the hire (represented, for example, as predictive validity).

From a scientific perspective, good quality personnel selection should include a mixture of selection methods, be requirement- and evidence-oriented, and be based on explicit decision-making rules (Kersting & Wottawa, 2014, p. 39).

To realize these quality requirements, standards for selecting suitable applicants, such as the ISO 10667 or (in Germany) the DIN 33430 (Kersting & Püttner, 2018, p. 2), have been developed. In addition, science expressly demands implementing selection instruments according to science-based quality criteria (Kanning, 2004, pp. 164–165.).

The Industrial and Organizational Psychology (I-O-psychology) area particularly

> emphasized the empirical evaluation of the value of employee selection methods that were based on principles of scientific research methodology being developed in experimental psychology and on standardized measurement of individual differences. . . . The basic cornerstone of employee selection from the perspective of I-O psychology is that measures of the abilities, knowledge, skills and other characteristics of job applicants can be used to predict which individuals will be (more) effective employees. Such measures are developed systematically, based on job requirements, to maximize accuracy and minimize error in the assessment of these individual differences among applicants (Farr & Tippins, 2010, p. 2).

Quality criteria in a selection process can be defined from three main perspectives:

1. Psychometric quality criteria (objectivity, reliability, validity, etc.)
2. Reciprocal quality criteria
   - 2.1 Social acceptance, fairness, justice, and ethics (social validity, maintaining the psychological contract, accepting a procedure by selecting managers and applicants, building a positive relationship, ensuring a positive candidate experience, and so on; and the acceptance of selection procedures is also influenced by cultural factors, the labor market situation, etc.)
   - 2.2 Legal and ethical criteria (general personality rights, data protection, labor law, ethics of IT-based, for example, artificial intelligence procedures)
3. Economical quality criteria: Organizational effectiveness and efficiency, including cost-effectiveness, cost–benefit ratio, practicability (i.e., resources required, feasibility, and ease of use), and the availability of a candidate (Deters 2017, pp. 62–63).

Looking at the quality in personnel selection from these different perspectives shows that the quality of personnel selection processes is inevitably related to the specific context of this process and the interacting parties. Thus, the information process in selecting candidates, what data and information are included, how they are processed, and so on, is directly tied to the situational context. As shown in Chapter 7, what constitutes quality of selection also differs between and within cultures.

### 3.2.1 Psychometric quality criteria

Psychometric quality criteria refer to the systematic collection of job requirements, the objective measurement of these job requirements such as skills and knowledge, abilities, attitudes, personality traits, and educational achievement, and the statistical underpinning of quality criteria, for example, objectivity, reliability, and/or validity. This is not the place to describe these various quality criteria in detail, and how they can be observed in designing selection procedures (a detailed description can be found in Deters, 2017, pp. 65–70). Instead, the aim is to briefly describe how selection procedures should be designed, so that consistency with scientific quality criteria is guaranteed, as far as possible.

Psychometric selection procedures aim to provide measurable, objective data and reduce reasons for low validity, for example, unstructured selection interviews. Psychometric personnel diagnostics is characterized by a conscious procedure by which results are converted into signs (language, scores, etc.), translating observations in CV screenings or application forms, interviews, or assessment centers into verbal scales or numbers. Therefore, in an interview or assessment center, for example, scaled behavioral anchors and evaluation sheets are required to evaluate the observed behaviors of the candidates, numerically. Thus, to get consistent observations and scorings of an applicant from a psychometric point of view, it is necessary to define behavioral anchors and to have clear rules for converting observations into scores.

Research clearly shows that a combination of selection procedures (e.g., general cognitive ability tests and structured interviews) based on scientifically proven research findings leads to better selection decisions (Schmidt et al., 2016). Thus, the psychometric selection procedures are based on evident research results and help HR managers secure a high-quality selection process and high-quality hiring.

In order to benefit all concerned (especially candidates and hiring managers), the decision-making process in personnel selection should be free of personal interests, biases, or arbitrariness. In addition, a rational-analytical approach in personnel selection requires that selection decisions should be based on the best available evidence and, thus, on sound research and not opinion.

### 3.2.2 Evidence as a prerequisite for high-quality selection decisions

Evidence has validity beyond subjective opinions and experiences. Therefore, evidence-based selection procedures should use theory-derived, research-based information and reflect the current state of empirical knowledge, that is, the best available "evidence" from systematic research. Evidence-based selection procedures, thus, require scientific, that is, methodologically determined proof. Furthermore, such a proposed procedure must be understandable, transparent, and explicitly justified.

Evidence-based hiring decisions should rely on empirically collected and evaluated scientific findings and be made based on empirically proven effectiveness of procedures. Empirical data is obtained, when the collection is conducted in a methodologically validated, systematic, and transparent process. Selection managers should use concrete and explicitly stated criteria and methods to interpret a procedure, based on evidence, ensure objectivity, validity, and reliability.

The everyday experience of human beings can lead to conclusions that contradict scientific findings. This is not only true in personnel selection but also, for example, in medicine. Here, people may rely on homeopathy or alternative therapies, whose benefit is not proven from a scientific perspective but have helped these people. This subjective evidence is based on the motto: One who heals is right.

A central question is defining and proving the effectiveness of a (selection) procedure. The classic answer to this question is: Effectiveness is equivalent to achieving the objectives of a procedure; and the reliable determination of effectiveness is done in validity studies. These are based on several methodological premises (paradigms). Proof of effectiveness requires specific study designs and settings, for example, in medical research:

- a study (= experimental conditions)
- on a cohort (= repeated observations on many participants)
- with one control cohort (= comparison)
- that is randomly generated (= randomization)

Different levels of evidence can be distinguished (based on OCEBM, 2011):

Ia Systematic reviews; availability of at least one systematic review (meta-analysis), based on methodologically high-quality randomized and controlled studies.

Systematically collected data that verifiably meet scientific quality criteria and are subject to a review process by experts before the results are published in a (high-ranked) scientific journal.

Ib Individualized randomized controlled trials; availability of at least one high-quality randomized and controlled study with sufficient sample size.

IIa Availability of at least one high-quality controlled study (non-randomized control).

IIb Availability of at least one high-quality quasi-experimental study.

IIc Systematic reviews (with homogeneity) of cohort studies.

III Availability of more than one high-quality non-experimental study (e.g., several high-quality descriptive studies).

IV Individual case-control study; case-series. This level of evidence can also be achieved in research by using qualitative research methods and the interpretation of interview results with a variety of experts (to ensure interrater-reliability).

V Intersubjectivity: Experts agree on a given set of meanings or definitions of the situation. In selection processes: Hiring managers share and integrate their subjective impressions about an applicant in an open, transparent discussion and reflection process. As a result, they reach a consensus or an agreement on an applicant's suitability for a vacant position.

Thus, the demand for evidence can be seen as a strategy to ensure quality and credibility, recognizing valid and reliable knowledge and proven procedures.

It is possible to reach evidence levels IV and V without a systematically performed scientific validity study, if there has been a corresponding exchange between the hiring managers and a systematic evaluation of the selection decisions. But, intersubjectivity, in particular, and thus, the agreement of selection experts on a candidate to be selected, is the weakest form of evidence. The claim of selection managers that even their professional experience can count as evidence cannot be accepted from a scientific point of view. The subjective belief that a specific selection procedure is of high quality cannot be described as credible, as evidence must be objective, from a scientific perspective.

Although subjective selection decisions based solely on intuition can be understood and even justified, they do not meet the quality criteria of evidence-based procedures.

Thus, from a scientific perspective, evaluating the effectiveness of selection procedures should not be based on individual or subjective personal experiences or observations.

The requirement that selection procedures and decisions should be evidence-based excludes specific selection procedures, especially those with very low objectivity, reliability, and validity (e.g., personnel selection based on graphology, astrology, or unstructured types of interviews). Therefore, in practice, scientifically proven methods and the corresponding acquired knowledge should be applied in personnel selection.

Nevertheless, several practitioners that were interviewed do not accept that the sole authority to interpret the evidence and determine the quality of personnel selection procedures should lie with science. This may be due to the imposition of a standard devaluing knowledge and practices that are not evidence-based, from a scientific perspective. For example, if practitioners feel that their competence, expert knowledge, experience, and intersubjective evidence of selection procedures are not taken seriously, their resistance and their criticism of science as too theoretical and not realizable in practice, is understandable (see Section 2.4).

The rational-analytical procedures in personnel selection, based on evident research results, for example, the DIN 33430 or ISO 10 667, are guidelines that will only be applied in practice, if the potential users are convinced of their value and benefit for their success (Kleebaur, 2007). To put evident and scientifically proven research results into practice, one should not make the mistake of thinking that these research results or DIN and ISO norms speak for themselves. Many practitioners fear that these norms and standards do not meet organizational context-specific requirements and restrict their autonomy and flexibility. Moreover, their competence in personnel selection is mainly based on their experience and expert knowledge of selecting appropriate candidates.

Moreover, the research results must be clearly formulated and available, if they are to be applied. Indeed, their implementation can measure the usefulness of research results, in practice. And, evidence-based findings from the research are only implemented in practice, if they are known and tailored to the users and their contextual environments. In addition, the individual attitudes, expertise, and related experience of the decision-makers should also be considered.

Evidence-based research findings in personnel selection are of little value, if they are not implemented.

### 3.2.3 Psychometric selection procedures

#### 3.2.3.1 Standardized design of selection processes and instruments

One aim of standards is to describe a common understanding of quality and, at the same time, to create a common language for quality. Therefore, a standard is "a required level of quality" (Deters, 2017, p. 62). Standards are (usually) consensually developed, tested, and agreed-upon requirements and rules that should be followed in specific processes. They promote the comparability, similarity, and homogeneity of processes across organizations and can, thus, increase confidence in the quality of these processes and the quality of the products. Standards, as a guideline, give orientation and can lead to greater clarity and security about how to behave, how applicants are to be treated, and which processes they have to go through. In addition, they foster transparency, equal treatment, and comparability of candidates.

On the other hand, standards limit flexibility and individual adaptation to specific circumstances. As a result, they can lead to higher costs and time expenditure, for example, for developing job descriptions and interview guidelines. Complex and abstractly formulated quality requirements can also be challenging to understand and may meet skepticism and, even, rejection (Deters, 2017, p. 51).

The more standardized the selection processes are, the more likely they will meet psychometric quality criteria (Deters, 2017, pp. 61–121).

In a study by Mc Daniel et al. (1994) (see also Levashina et al., 2014), unstructured means no predefined questions, no grading on rating scales, and in the end, a

global judgment is made. Structured or standardized means that predefined, job-related questions are used consistently for all applicants, without asking further questions. In addition, rating scales are used, and an overall evaluation expressed in numbers is made at the end of the interview.

A meta-analysis conducted by Schmidt and Hunter (1998, pp. 265, 272; see also Schmidt et al., 2016) shows which selection methods and instruments (and combination of methods) have a high degree of validity, and which, due to their low values, resemble a random selection. For example, tests for measuring "general cognitive abilities and general intelligence" (Schmidt & Hunter, 1998, p. 264) achieve a validity of 0.51 and work samples of 0.54, thus advocating their use in practice (Schmidt & Hunter, 1998, p. 272).

Employment interviews are the most frequently used technique in personnel selection, and applicants and selection managers accept them very well. Many studies have shown that interviews can validly predict job performance (Oostrom et al., 2016). However, the validity of interviews differs according to how they are structured. While the validity of structured interviews is relatively high (0.51), unstructured interviews reach only $r = 0.38$. Thus, structured interviews are preferable. If tests and structured interviews are combined in the selection process, a validity of 0.63 can be achieved (Schmidt & Hunter, 1998, p. 265).

Related to unstructured interviews, Weuster (2012, p. 205) states that the selection decision is made in the form of an intuitive, impressionistic global assessment, sometimes as a random decision or as an ad hoc decision, according to the "matching chemistry" or "from the gut." From a scientific perspective, the disadvantages of unstructured interviews outweigh the advantages (Kanning et al., 2008, p. 123), and highly structured interviews are superior to less structured or unstructured interviews (Levashina et al., 2014; Kanning, 2019, p. 580). Huffcut & Culbertson (2011) discuss "The Paramount Role of Structure." "If a sample of researchers and practitioners in the field were asked what was the single most important influence on the interview process and its outcome, a majority would no doubt say it is structure" (Huffcut & Culbertson, 2011, p. 194).

Oostrom et al. (2016) show that structured, situational interviews predict candidates' work-related performance because "participants' ability to decipher situational demands correctly was related to performance in both the interview and work-related situations. Furthermore, the relationship between the interview and performance in work-related situations was partially explained by this ability to decipher situational demands. Implications: Assessing interviewees' ability to identify criteria might be of additional value for making selection decisions, particularly for jobs where it is essential to assess situational demands."

The research of Schmidt & Hunter (1998) and Schmidt et al. (2016) confirm that selection procedures with a higher level of standardization are superior to those with a lower level of standardization (Schmidt & Hunter, 1998; p. 272; Lodato et al., 2011, p. 353). Also, to ensure that all candidates are asked the same questions, it is advisable

to standardize them, using interview guidelines (Kanning, 2004, pp. 411–412). Standardization of questions and structured interviews increases candidates' comparability and helps decision-makers make better decisions (Conway et al., 1995, p. 575).

> The research evidence . . . shows that different methods and combinations of methods have very different validities for predicting future job performance. Some, such as person-job fit, person-organization fit, and amount of education, have low validity. Others, such as graphology, have essentially no validity; they are equivalent to hiring randomly. Still others, such as GMA (General Mental Ability, J. D.) tests and integrity tests, have high validity. Of
>
> the combinations of predictors examined, two stand out as being both practical to use for most hiring and as having high composite validity: the combination of a GMA test and an integrity test (composite validity of .78); and the combination of a GMA test and a structured interview (composite validity of .76). Both of these combinations can be used with applicants with no previous experience on the job (entry level applicants), as well as with experienced applicants. Both combinations predict performance in job training programs quite well (.78 and .72, respectively), as well as performance on the job. . . . The validity of the personnel measure (or combination of measures) used in hiring is directly proportional to the practical value of the method – whether measured in dollar value of increased output or percentage increase in output. In economic terms, the gains from increasing the validity of hiring methods can amount over time to literally millions of dollars. However, this can be viewed from the opposite point: By using selection methods with low validity, an organization can lose millions of dollars in reduced production, reducing revenue and profits (Schmidt et al., 2016, pp. 48–50).

Based on meta-analyses of data, more recent research shows that unstructured interviews may possess greater validity than previously recognized. In other words, it may be the case that unstructured interviews are as valid as structured interviews (Oh et al., 2013, pp. 298 and 323).

In their study from 2016, Schmidt, Oh, and Shaffer included new data from research conducted over the last 20 years, taking into account progress in research methodology and, therefore, providing more accurate results; in addition, new selection methods and criteria, such as telephone interviews and school grades, which were not considered in 1998, were included. Furthermore, corrections were made about possible distortions of validity coefficients by range restrictions and publication bias. As regards the validity of interviews, they came to surprising results. While structured interviews in the 1998 study had a validity of 0.51, unstructured interviews only had a validity of 0.38. But the study of 2016 shows that structured and unstructured interviews can very well have the same high validity (0.58).

According to Oh et al. (2013), an explanation of why unstructured interviews can also be of relatively high validity is that interview validity is determined more by content (the constructs being measured) than structure (the mode of measurement). Likewise, unstructured interviews may be conducted by skilled human resource professionals or managers with significant interviewing experience. Such interviewers may possess a repertoire of effective interview techniques applied rather consistently across candidates. In addition, the free-flowing structure of the informal interview puts the subject at ease and perhaps "off guard" and allows

more diagnostic cues relevant to factors that predict job performance. They, therefore, conclude that just as it is possible to conduct poorly structured interviews, it may also be possible to conduct good unstructured interviews.

These results of Oh et al. (2013) and Schmidt et al. (2016) show that skilled and experienced hiring managers can be successful even without complete standardization of interviews.

Eisenkraft (2013) shows in a study that people can make accurate judgments about the personalities of applicants, even based on small behavioral excerpts. In particular, when the judgments of several assessors are evaluated, measurement errors are reduced, and, thus, validity, that is, predictive validity concerning performance and success in the job, is increased. This means that intuition is particularly risky, if assessors do not critically question their conclusions and do not reflect on their judgments with other hiring managers (Nachtwei et al., 2013, p. 36).

However, the more specific and narrowly defined the job requirements to be measured, the more structured the interview. Thus, high-quality selection interviews shouldn't completely lack structure. Semi-structured interviews with behavioral anchors and rating scales are an excellent way of assessing an applicant's personality, values, motives, and fit with the company, corporate culture, team, and job.

Therefore, only the core elements of a rational-analytical selection interview are presented here (Schuler, 1996, p. 87; Ackerschott et al., 2016, p. 103; Krause, 2017, p. 248).

**Core elements of a selection interview** (from a psychometric perspective)

1. Requirement-related interview design using a job description: This should be based on a systematic requirements and job analysis. For the requirements analysis, Kanning (2015, p. 85) recommends distinguishing between competence dimensions, which use consistent criteria and a scale to show the extent of competence to create a comparable assessment standard for all applicants.
2. Ensure that all candidates are assessed against the developed job requirements and selection criteria, at every stage.
3. Restrict the interview to those requirements and questions that cannot be identified more reliably by other personnel selection procedures, such as analyses of CVs and tests.
4. Structure the interview: Develop, at least, a semi-structured interview guideline based on the job requirements and use tested and anchored behavioral scales (the empirical verification of individual questions). Use these anchored scales to score every candidate.
5. Several questions should be asked for each requirement and selection criterion.
6. Make sure that the recruitment process meets ethical and legal requirements.
7. Appoint multiple (at least two) interviewers.

8. Integrate components/exercises from different selection methods, for example, from an assessment center (a critical situation in the position to be filled), and use tests, for example, cognitive ability tests.
9. Separate observation and collection of information from decision-making.
10. Use structuring tools to observe and evaluate the interview and document the results.
11. Train all interviewers.

Figure 1 given an example of a standardized evaluation of interview questions.

| **Questions**: Have you taken any leadership roles during your studies, for example, at university or in a club? Have you been, for example, a class representative or youth group leader? Have you organized an activity, for example, a theatrical performance or a youth camp for a larger group, on your own? (Further question: How long did you do that?) | |
|---|---|
| Evaluation of the answer | |
| – (3 points) | Management responsibilities with a specific action designator (class representative, management of youth groups in the club, etc.) for at least 2 years |
| – (2 points) | (Other) management tasks with a concrete action designator for at least 3 months |
| – (1 point) | Management tasks without formal function (e.g., field trip or youth recreational organization) |
| – (0 points) | No or only insignificant management tasks (e.g., organized group orders) |
| . . . . . .Total points | |

**Figure 1:** Standardized evaluation of a selection interview (referring to Schmidt-Atzert & Amelang, 2012, p. 324).

An excellent way to conduct interviews with high validity is the Multimodal Interview, developed by Schuler (2014) (see Section 10.3.5).

#### 3.2.3.2 Psychometric tests as part of rational-analytical procedures

Psychometric testing aims to assess how a candidate's specific characteristics and abilities will relate to the requirements of a particular role by identifying and measuring a candidate's abilities, for example, cognitive abilities, personality (traits) and behavioral characteristics, integrity, attitudes, motivation, skills, knowledge, leadership potential, and intercultural competencies. They identify the extent to which a candidate's personality or cognitive abilities match those required to perform the function. The information collected from the psychometric test can identify hidden aspects of candidates that are difficult to get from a CV or an interview. Thus, tests can help determine which candidates are most likely to succeed in a particular job.

A psychometric test that meets the scientific quality criteria is developed using statistically examined methods. And, a test should not care about a candidate's looks, name, gender, race, sexual orientation, height, weight, and so on.

Setting up a psychometric test as a filter for a flood of candidates can effectively reduce the number of people the hiring manager spends time and energy with. Thus, psychometric tests can improve selection decisions and reduce recruitment time and costs.

A good psychometric test meets scientific quality criteria such as objectivity, reliability, and validity. Also, it should be perceived as fair and unbiased against any particular candidate and administered and interpreted by someone qualified to do so, competently.

Many psychometric tests are valid and reliable in predicting the performances of candidates and success in a specific job. Met analyses have shown that a valid psychometric test, for example, cognitive ability, integrity, or personality tests (one valid personality test is the NEO-PI-R), can improve recruitment outcomes (Schmidt et al., 2016).

Personality and personality traits manifest themselves in thinking, feeling, and behaving. The personality of human beings is more or less stable, and enduring characteristics influence their thinking, feeling, experiences, perceptions, and behaviors (Eysenck, 1953, p. 2).

Personality tests confirm relatively high stability of personality, and especially personality traits. This assumption, which characterizes many concepts of personality (e.g., Big Five personality traits by Costa &McCrae, 1988), is that people's behavior remains relatively constant, regardless of the social context or situation. Researchers have conceptualized personality in various approaches, but among all personality characteristics, five factors are widely accepted and most commonly used by researchers and practitioners to describe and evaluate individual personality. These five factors are extraversion, agreeableness, conscientiousness, emotional stability, and openness or intellect. Researchers labeled these five factors the "Big Five" (Costa & McCrae, 1988).

But, human behavior is also influenced by the context; behavior can be explained as a reaction to the behavior of others, for example, the behaviors of applicants in response to the behaviors of an interviewer (and vice versa). Thus, it is necessary to look at the interaction of personality and situation (interactionism). In some contexts, the influence of the situation is overpowering, whereas in others, it is minimal, and all variations in behavior are due to personality characteristics. Therefore, it is essential to recognize the influencing personality and situational factors on human behavior.

Research shows that there is a dynamic in the process of personality development. Many twin studies show that there is always interplay between genes and the environment. For example, in a large-scale twin study in Germany, 300 pairs of same-sex twins aged 18–70 were investigated. The study shows that differences (total variance) across all personality traits could be explained by genetic influences in

42% of cases, by effects through the environment shared by the twins in 18% of cases, and by the impact of the environment specific to the individual twin in 35% of cases (Spinath et al., 2002). In a study by Assary et al. (2020), 2800 pairs of identical uni- and dizygotic twins were interviewed . Their analysis led them to assume that 47% of the different sensitivities of the respondents were due to their genes, the other 53% due to environmental factors. The results also show that the genetic basis of a person's sensitivity determines the extent of positive or negative experiences and their effects on behavior.

For many researchers, human personality is much more than personality traits. Personality is also determined by a person's motives, values, attitudes, or habits. Using this broad definition of personality, our "personality is constantly developing" (Specht, 2018, p. 14). Personality development is not only a question of human maturation but also depends on taking on social roles and responsibilities, for example, in the transition from school to working life or the founding of a family. Personality characteristics such as attitudes, values, or motives are more accessible to change than intelligence or personality traits (Asendorpf, 2018, p. 217). High stability in social-emotional personality characteristics is only achieved in old age. The Big Five personality traits (Costa & McCrae, 1988) are relatively stable until the age of 55 and then become more unstable (Asendorpf & Neyer, 2012, p. 271).

Personality development takes place based on our genes and environmental influences; conversely, from a dynamic-interactional perspective, people can also influence their genes (e.g., epigenetic change by DNA methylation or histone modification) and the environment through their personality and related ways of thinking and acting. Thus, shown behavior is not only a consequence of personality characteristics but also of situational factors (Asendorpf & Neyer, 2012, pp. 304–308).

What does this mean for selection decisions? First, the behavior shown in a selection process should not automatically be attributed to stable personality factors but also situational context reactions.

For example, a target personality profile is required when using personality tests. This ideal-typical picture of the desired job holder is compared with the applicant's actual profile. This reveals specific personality and associated behavioral tendencies. The more the existing profile of a candidate meets the target profile, the less "energy" the candidate needs to invest to meet the requirements of the job or the environment's expectations.

In addition, scientifically-based personality tests, usually based on self-assessment, should be supplemented by external assessment, for example, by peers or superiors (Oh et al., 2011; Poropat, 2014).

However, results of psychometric tests are often challenging to understand for people without psychological education or training. Companies using psychometric test procedures, thus, often consider procedures and processing results that require no psychological training or degree to understand them. Nowadays, many psychometric test reports, for example, on personality or integrity, are less complex and easy to

understand. Usually, test providers use simplified, real-world language and graphics that tell the hiring managers and candidates precisely what they need to know.

Using modern, for example, AI-based test procedures can create a powerful initial impression of an employer's brand, since applicants may be attracted to new recruitment and selection processes. Applicants often name the objective approach to assessing their capability as a key reason behind their satisfaction with the recruitment process (see Section 2.5).

To select (global) leadership talents, it is essential to assess the potential of candidates.. Psychometric assessment is about future-proofing. In the age of digitalization and fast change, it is not enough to look at someone's CV and do a traditional interview, from a psychometric perspective. Identifying and developing the potential to handle challenging situations, having the right mindsets, attitudes and attributes such as situational awareness, openness, flexibility and adaptability, and other personality characteristics will be crucial to the future workplace**.**

Specific tests of cognitive ability, personality, or integrity can help analyze an individual's more "hidden" traits and potential because formal education and past experience will not always provide a clear, up-to-date assessment of these personal competencies and potential.

Psychometric tests can increase the scope of information. IT-supported data analysis methods can also help recognize patterns, interrelationships, and correlations and improve personnel selection decisions. The human mind has clear processing limits and is subject to effects such as distortions of perception. For this reason, analytically oriented personnel selection can be further optimized using IT-supported psychometric data analysis methods (e.g., artificial intelligence; see Chapter 8).

Psychometric results, for example, results of a high valid cognitive ability or personality test, can be used for pre-selection. The results of a personality test, in particular, can also be used to provide valuable information of the applicant in the further selection process.

Personality tests, in general, are controversial in personnel selection because many of them show relatively low validity; Funk et al. (2015, p. 27) have calculated the validity of 0.12 as the mean across different scientific studies. However, a meta-analysis by Barrick et al. (2001) shows that conscientiousness is the most valid personality trait for predicting professional performance (.27), and the second most valid personality trait is emotional stability (.13). "Results support the previous findings that conscientiousness is a valid predictor across performance measures in all occupations studied. Emotional stability was also found to be a generalizable predictor when overall work performance was the criterion, but its relationship to specific performance criteria and occupations was less consistent than was conscientiousness" (Barrick et al., 2001, p. 9).

Since the significance and validity of many personality tests used in practice (e.g., MBTI) for predicting career success as (global) leaders are relatively low, and because

in many countries, managers and applicants are critical of tests as methods of personnel selection, these test results should be handled very carefully. They could be used to reflect on and analyze possible reasons for deviations and as a basis for more in-depth or clarifying questions in the selection interview.

Additionally, using language analysis software and personality tests based on social media data can also be criticized, mainly because the scientific quality of such methods has not been clearly proven (see Sections 8.6–8.12).

As a result, it can be stated that valid psychometric tests can help filter the candidates (especially for "high volume recruitment") and make selection decisions much better informed, but they can't make a decision perfect.

#### 3.2.3.3 Development and application of selection decision rules

Personnel selection decisions are usually complex, because they have to consider various contextual factors. To cope with this complexity, rules can be helpful in giving orientation to selection decisions.

From a rational-analytical perspective, selection decisions should not be based on subjective convictions and intuitions but on rules previously developed and agreed upon by selection experts. Therefore, according to psychometric requirements, a necessary step is developing, documenting, and applying explicit and verifiable decision-making rules. In addition, some selection standards, including the ISO 10667, the DIN 33430, Standards for Assessment Center or Interviews, Standards for Educational and Psychological Testing, International Guidelines for Test Use, and Principles for the validation and use of personnel selection procedures, also point to such rules. (Many examples for standards are given in Kersting & Püttner (2018, p. 16). For decision rules in selection processes, see Kanning (2004, pp. 268–285).)

A decision rule is a "sequence of information-processing operations" to form – based on the information available – a preference, judgment, and decision (Pfister et al., 2017, p. 96).

With the implementation of decision rules, the selection process is more standardized, and in particular, the following goals and associated advantages should be achieved:

- Objectivity and transparency are promoted when the decision rules and job requirements are clear to all selection managers. Therefore, they do not proceed according to subjective rules or requirements but according to those implemented in a systematic survey process. In this way, the subjective influence of the individual hiring manager can be reduced, and scientific quality criteria can be applied more efficiently.
- The scientifically proven quality of personnel selection increases. Through the exchange between managers and the agreement on rules, on the one hand, the knowledge gained from experience is used, and on the other hand, a practical

approach to learning with and from each other is encouraged (Wottawa, 2013, pp. 914–916).
- The legal position is strengthened if concrete, objectively understandable reasons for the rejection of an applicant can be given (Wottawa, 2013, pp. 914–916).
- Equal treatment and fairness are fostered, because all candidates are assessed according to the same rules, which are decided upon before starting the selection process. With precise procedures and decision-making rules, every candidate is treated more equally, and discrimination and biases can be reduced.

Acceptances and rejections of candidates are perceived as fair, as they can be justified with previously defined selection criteria and decision-making rules.
- A personnel selection process based on clear rules and requirements can be evaluated more systematically, afterward. At the same time, it is possible to see whether the selection process and the associated decision rules need to be adapted and changed.

A question to be answered is how decision-making rules are developed. From a rational-analytical perspective, these rules should be set, as far as possible, based on scientifically proven evidence (Westhoff & Flehmig, 2013, p. 906).

In theory and practice, very different decision rules for personnel selection have been developed so far, depending on the corporate context, corporate goals, or even requirements of specific stakeholders (e.g., concerning diversity and prevention of discrimination). In addition, the particular labor market situation, such as the availability of specific skills, also plays a significant role in determining which rule is used. Thus, no generally valid decision-making rules for personnel selection have yet been developed.

In many companies, especially SMEs, selection managers often have implicit decision-making rules in mind, without explicitly knowing or formulating them or making them transparent. For example, such rules could be that no one will be hired without at least a grade of "good" (B) on their math degree or an IQ score of 100. Or that they do not employ anyone they personally dislike or who they feel does not fit into the team.

A distinction can be made between a) scientifically guided and b) subjective individual decision rules. However, it becomes clear that this distinction cannot always be maintained in practice, since even scientifically guided procedures can incorporate subjective and individual experiences.

#### 3.2.3.3.1 Scientifically guided and systematically developed decision rules

Job requirements and competency models often do not provide concrete cut-off scores, such as how distinctive an applicant's cognitive ability or achievement motivation should be (Montel, 2006, p. 129).

To develop the decision rules, selecting and evaluating criteria and ratings of aspects of the job, in this case, predictors for job success are needed. To get these predictors, a correlation should be established between selection results (e.g., test results or scores in an interview or assessment center) and various criterion measures or scores, which should be based on reliable and valid performance measurement systems, for example, objective performance data or objective assessments by superiors.

In this context, a few questions must first be clarified. What makes successful job holders different from others? What scores and rater judgments do they achieve in quantitative procedures such as tests, questionnaires, interviews, assessment center evaluations, or analysis of application documents?

In addition, it must be clarified how the selection criteria (required KSAOs) should be weighted, for example, personal characteristics and predictors such as cognitive ability, language skills, technical knowledge, or other required competencies. For example, the weighting of the criteria measured can be based on evaluating which KSAOs are particularly decisive for success on the job or when the lack of a particular KSAO might indicate the likelihood of trouble.

Often, practitioners weigh up the measured selection criteria against each other and make a distinction between "must have" (e.g., define minimum KSAOs, Deters 2017, p. 155), "should have," and "nice-to-have" qualities. Not only scores of selection criteria (predictors) should be measured, but also the gut feelings of hiring managers can be included in this weighing up, for example, positive feelings toward a candidate on a scale from 1 to 5 (Montgomery, 1983, p. 343). Then, based on this information, one or more rules can be developed and used for decision-making. One rule in practice can be: "We don`t hire a candidate we have a bad gut feeling about."

The decision rules apply the same way to the specific job to be filled as for analyzing all job-specific data sets. Decision rules may include the following aspects: Interpretation examples, cut-off scores, profiles, tolerance scores, the weighting of KSAOs and specific competency dimensions, critical differences, norms, and mathematical allocation rules (Kanning, 2019, p. 346; in this book, Kanning gives several different examples for decision rules in personnel selection; see also Schmidt-Atzert et al., 2018, pp. 199–200 or Wottawa, 2013).

Montgomery (1983, p. 345) gives some examples of decision rules:

- **DOM (dominance rule):** An option is chosen if it "dominates" the others (candidate A is better than candidate B on at least one criterion measured and not worse on all other criteria). Using a complete pair comparison can be very time-consuming if you have many applicants (unless you use IT-supported procedures).
- **CON (conjunctive rule):** In this case, cut-off scores are defined for every selection criterion. Only candidates whose scores exceed or are equal to predefined baselines are selected. These could be cut-off scores, for example, at least 100 on the IQ standard classification scale, minimum scores in knowledge or ability

tests (e.g., 80% correct solutions in a concentration test or other performance tests), or specific physical fitness criteria in selection of police officers.

Cognitive ability, conceptualized as a mental or intellectual capability for abstract reasoning, problem-solving, thinking abstractly, comprehending complex ideas, learning quickly and from experience, and adapting to new tasks and environments, strongly predicts learning and overall job performance, leadership effectiveness, and career success (Ones et al., 2012; Deters, 2017, p. 166). An IQ test score is calculated, based on a norm group with an average score of 100 and a standard deviation of 15. The standard deviation is a measure of spread, in this case, IQ scores. An IQ score of 100 means that the test-takers performance is at the median level of performance in the sample of test-takers of about the same age used to norm the test. An IQ score of 115 means performance one standard deviation above the median, a score of 85 performance one standard deviation below the median, and so on.

A standard deviation of 15 means 68% of the norm group has scored between 85 (100 − 15 = 85) and 115 (100 + 15 = 115). In other words, 68% of the norm group scored within one standard deviation of the average (100).

Also, 95% of the norm group has an IQ score within two standard deviations of the average. So, 95% of the norm group scored between 70 (100 − 30 = 70) and 130 (100 + 30 = 130). This means scores of over 130 only occur in 2.5% of cases.

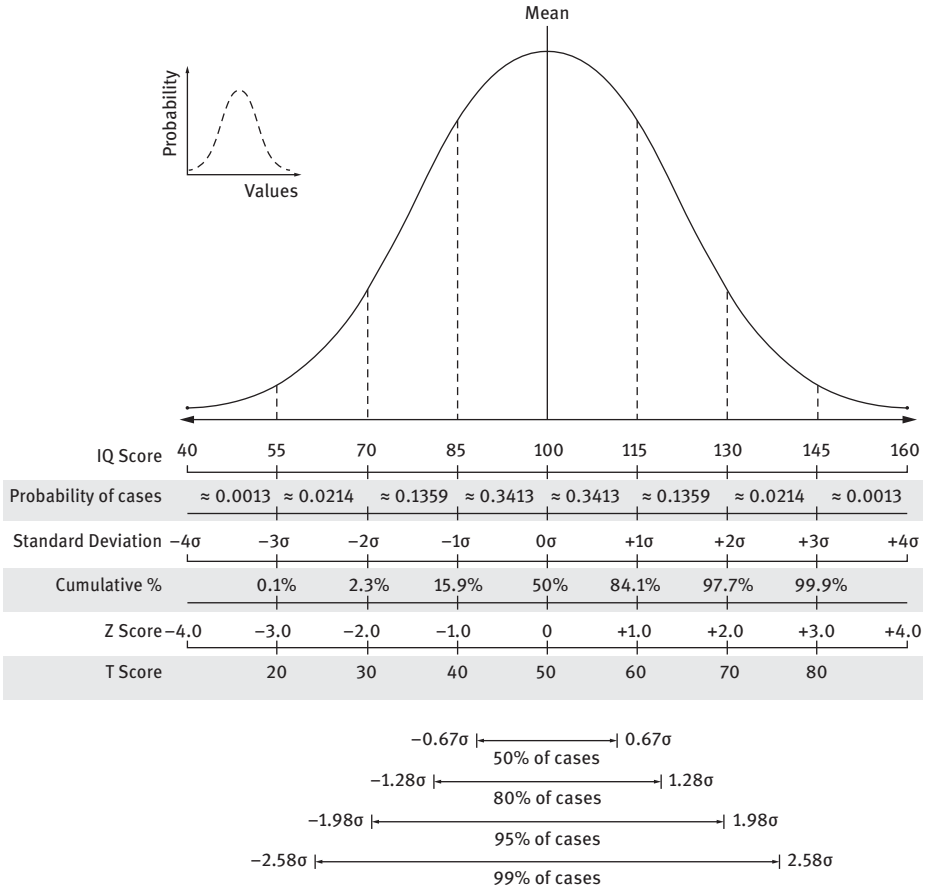
In employment testing, cut-off scores can filter out job candidates who did not score high enough on a pre-selection test or assessment. Candidates who fail to obtain the required scores in the pre-selection test can be excluded from further selection procedures and receive a rejection. Conversely, the applicants who have exceeded the required scores remain in the selection process.

Cut-off scores are only as good as the test and the outcome measures used to "validate" them. Cut-off scores can be determined using different methods. Classical test theory assumes that each person has a "true score" (T), which would be obtained if there were no errors in measurement. A person's true score is the expected number-correct score over an infinite number of independent test administrations. Unfortunately, test users never observe a person's true score, only an observed score (X). It is assumed that the observed score corresponds to the true score plus some error:

For cognitive ability or IQ, a cut-off score could be (depending on the job and job requirements)

- one standard deviation above the average score
- two standard deviations above the average score

As a rule, no single IQ score is recommended as a cut-off, but an IQ in the range of 85–115 might be established as a requirement for specific jobs or applicants (see Figure 2).




| IQ Range ("deviation IQ") | IQ Classification |
|---|---|
| **130 and above** | Very superior |
| **120–129** | Superior |
| **110–119** | High Average |
| **90–109** | Average |
| **80–89** | Low Average |
| **70–79** | Borderline |
| **69 and below** | Extremely Low |

**Figure 2:** Wechsler (WAIS–IV, WPPSI–IV) IQ classification (data provided by 123test, 2022).

Research shows that traits such as conscientiousness and emotional stability are valid predictors of job performance (Salgado, 1997; Deters, 2017, p. 166). However, decision rules for personality tests, integrity tests, intercultural adaptability, or global leadership tests may also be helpful ( Deters, 2017, pp. 167–171). Therefore, apart from

the fact that the test results can be used as information for further interviews with the applicant, companies and selecting managers can also formulate minimum scores or specifications for specific items such as emotional stability or cultural adaptability. This can be done by taking the test results of successful managers as a benchmark for comparison with the test results achieved by applicants.

The following decision rules should be discussed for appraisals and performance reviews by superiors of (internal) candidates.

- **DIS** (Disjunctive Rule): Only candidates with at least one score exceeding or equal to a predefined baseline are selected. This can be useful in pre-selection, for example, concerning a degree or score in a specific subject or a final or exam grade.
- **LEX** (lexicographic rule): Candidate A is chosen over candidate B if s/he is better on the most critical criterion measured (KSAOs). If this is not possible, the choice is based on the next most vital measured criteria. The most important attributes should be defined in advance, in order of importance for the job, and it must specify by which criteria the importance of an attribute is determined. Then, a profile comparison can be made between the applicant's and target profiles.
- **EBA** (elimination-by-aspects rule): This method first identifies a single most important attribute to the decision-maker. Exclude all candidates who do not fulfill the most critical attributes. If a candidate doesn't meet the cutoff score for these attributes, then s/he is eliminated from consideration. Repeat this procedure with new criteria measured in the order of importance.
- **MAU** (Multiattribute utility rule): Each scored attribute is multiplied by its percentage of importance (the weighting factor for all criteria measured together is 1,0 = 100%). The overall score of a candidate is determined by the weighted total (sum) of the attribute scores. A psychometric procedure requires these numerical (quantitative) data (Görlich & Schuler, 2014, p. 1151). This decision rule is widespread in personnel selection (see Figures 3.1–3.3).
- **Multiple cutoff rule:** A minimum cutoff score for several criteria measured can be formulated. Only those whose scores are above the minimum cutoff for every attribute are selected. A ranking procedure can be used if several applicants score above this cutoff.
- **Ranking rule:** Rather than using an absolute score, applicants are ranked according to their performance compared to other candidates. Then, depending on the number of vacancies to be filled, the person or persons ranking highest are selected.

In Figures 3.1–3.3, rules to analyze and evaluate candidates are shown, example evaluation of a curricculum vitae (see Deters, 2017, p. 158; according to Mueller, 2012, p. XXVII).

It is also possible to weigh the different job requirements as follows; the result is to choose candidate B:

| Selection criteria (KSAOs)/job requirements | Weighting | | Candidate A | | Candidate B | |
|---|---|---|---|---|---|---|
| | Rank | (max.) score *x* | Individual judging points *y* | Individual judging sum: *x* multiplied by *y* | Individual judging points *y* | Individual judging sum: *x* multiplied by *y* |
| **Study degree in engineering** | 1 | 10 | 8 | 80 | 4 | 40 |
| **Foreign language skills** | 2 | 9 | 7 | 63 | 6 | 54 |
| **Foreign experience** | 3 | 8 | 2 | 16 | 8 | 64 |
| **Work experience (at least 3 years in a company)** | 4 | 6 | 6 | 36 | 6 | 36 |
| **Leadership experience** | 5 | 5 | 4 | 20 | 5 | 25 |
| **Shown flexibility and mobility** | 6 | 4 | 2 | 8 | 4 | 16 |
| **Total amount** | | | | **223** | | **235** |

**Figure 3.1:** Choose the candidate with the highest sum (weighted): candidate B.

| Job requirements | Weighting factor (sum = 1,0) | Score of candidate B (0–10) | Score × weighting factor |
|---|---|---|---|
| A (e.g., study degree in engineering) | 0.3 | 7 | 2.1 |
| B (e.g., technical knowledge) | 0.3 | 8 | 2.4 |
| C (e.g., foreign language skills) | 0.2 | 6 | 1.2 |
| D (e.g., leadership experience) | 0.2 | 4 | 0.8 |
| | | | Sum 6.5 |

**Figure 3.2:** Weighted score for candidate B (decision – choose candidate B).

| Job requirements | Weighting factor (sum = 1.0) | Score of candidate A (0–10) | Score × weighing factor |
|---|---|---|---|
| A | 0.3 | 8 | 2.4 |
| B | 0.3 | 5 | 1.5 |
| C | 0.2 | 5 | 1.0 |
| D | 0.2 | 5 | 1.0 |
| | | | Sum 5.9 |

**Figure 3.3:** Weighted score for candidate A.

The rational-analytical approach demands a standardized evaluation of questions asked in a selection interview (see Figure 4).

On the subject of leadership experience, for example, the following questions could be conceivable: "Did you take on any leadership tasks during your studies or school days, for example, in sports or as a student representative? Have you perhaps organized an activity for a larger group on your own, for example, a theater performance or a trip with a sports team? If so, for how long did you do this?" (Schmidt-Atzert & Amelang, 2012, pp. 324–325).

| Evaluation of the answer | Score | Description of "leadership motivation in the past"(0–10) |
|---|---|---|
| – | 10 points | Leadership tasks with a concrete job description (student representative, leading youth groups, etc.) for at least 2 years |
| – | 5 points | Leadership tasks with concrete job description (student representative, leading youth groups, etc.) for at least 1 year |
| – | 2 point | Leadership tasks with concrete job descriptions (student representative, leading youth groups, etc.) for at least three months; organizing a school/class trip, youth leisure time, theater performance, and so on |
| – | 0 points | No or only insignificant leadership task |

**Figure 4:** Evaluation and scoring of answers in a job interview (Schmidt-Atzert & Amelang, 2012, p. 324–325).

At the end of an interview, every selection manager's scores are added up, and an average is taken. Then, the results/scores of the different applicants are compared, discussed, and placed in ranked order (DIN 2016, p. 14).

The described decision rules by Montgomery are non-compensatory (Montgomery, 1983, p. 346). This means that an organization decides that every potential candidate should at least perform on specific attributes with a particular score, for example, 5 in leadership experience, and a candidate should be sorted out when their score in "leadership experience" is below 5. The non-compensatory rules do not allow a low score on one criterion to be compensated by another criterion.

**Compensatory decision rules:** It can be decided that a specific attribute or job requirement can be compensated by another one. When applying a compensation strategy, the organization and hiring managers consciously accept that strengths can compensate for weaknesses in a job requirement. In any case, it should be carefully considered whether such a compensation decision rule makes sense.

For example, a candidate's low score in working in a team can be compensated by a high score in another critical attribute. Finally, the candidate who achieves the highest multi-attribute score is selected.

Conversely, a company can decide that low performance in one job requirement (for example, eyesight for pilots or ability to concentrate for flight controllers) cannot be compensated by high performance in another. Therefore, which job requirements or predictors are used and whether it should be possible for other criteria to compensate for a poor score in a specific attribute should be decided based on the results of a job and requirements analysis and evaluated data (Schmidt-Atzert et al., 2018, pp. 199, 411–412).

Digitally supported methods are increasingly being used systematically to evaluate correlations between competencies and success on the job. In particular, using data mining, big data, or people analytics can support this process (see Sections 8.1–8.4).

#### 3.2.3.3.2 Implicit decision-making rules

If the selection process is systematically planned, the selection managers are committed to decision rules and the required KSAOs (Kanning et al., 2008, pp. 64–65). In practice, personnel managers often decide by using the decision rules that have been most successful in the past. When considering how to decide, the trade-off between accuracy and effort must be taken into account: The more closely taken into account and calculated the various influencing factors are the more accurate, but also complex, the decision rules (Pfister et al., 2017, p. 248). It depends on the management's willingness and resources (time, money, etc.) and how systematically developed and agreed-upon decision rules in personnel selection are used.

In practice, these decision-making rules can also be carried out implicitly by individual judgments of hiring managers. The selection managers make a holistic, intuitive, overall assessment of the applicant. They evaluate a candidate, for example, on the whole as "good," without being able to define precisely whether the

applicant is good in all attributes or very good on some and satisfactory on others (Pfister et al., 2017, p. 97).

According to Montgomery (1983, p. 343), a decision is made, not based on statistical results but produced by a "click experience" or feeling of confidence in knowing what's most important. In this scenario, the feeling of making the right decision is triggered when a subjective dominance rule is fulfilled or not. Then, candidates may be rejected because they have not shown the appropriate level of proficiency in that subjectively essential job requirement of a decision-maker.

According to Pfister et al. (2017, p. 247), a decision is considered "good" if as much information as possible has been taken into account and if this information has been integrated in a way that is consistent with the generally accepted theories of rational decision-making, for example, decision-rules.

Such implicit and usually non-transparent subjective decision rules must be identified, made transparent, and integrated into general organizational decision rules.

#### 3.2.3.3.3 Legal or diversity influences

Specific selection rules may eliminate candidates who do not meet the specified selection criteria, but some possibly rejected candidates could still be of great interest to the company. Therefore, the decision-making rules should always be reflected critically. A further risk in fixed rules is that you may end up with a relatively homogeneous workforce, reducing diversity and, thus, innovative strength and competitiveness.

Another reason to favor diversity is when based on legal or voluntary agreements, companies give exceptional support to specific groups of people (e.g., ethnic groups or minorities, people with physical challenges, women, and older people). This can result in particular decision-making rules, for example, a physically challenged applicant or a woman is hired if qualifications are otherwise equal to other applicants. Or, to comply with the law, a specific position must be filled by a woman, a member of a minority group, and so on.

### 3.2.4 Norms, standards, and guidelines for rational-analytical selection procedures

Unfortunately, many "black sheep" still exist among selection managers who use bizarre and questionable tests or interview methods. Applicants want fairness and transparency in selection processes, based on scientifically proven methods. Therefore, rational-analytical procedures, supplemented by ethical standards, can protect candidates from improper or abusive selection procedures and guarantee each applicant, a comparable and fair process.

#### 3.2.4.1 The DIN 33430, DIN Spec 91426, or ISO 10667 as examples of selection norms and standards

There are various quality standards and organizations developing standards in personnel selection worldwide. Kersting & Püttner (2018, p. 16) list some examples: ISO 10667 (International Organization for Standardization: Assessment service delivery: 1. Assessment service delivery – Procedures and methods to assess people in work and organizational settings – Part 1: Requirements for the client. ISO 10667–2. Assessment service delivery – Procedures and methods to assess people in work and organizational settings – Part 2: Requirements for service providers); AKAC-I (Standards for Interviews): APA (American Psychological Association: Standards for Psychological Testing); EFPA (European Federation of Psychologists Associations: Assessment system for tests); ITC-CB (International Guidelines on Computer-Based and Internet-Delivered Testing); ITC-TA (International Guidelines for Translating and Adapting Tests); SIOP (Society for Industrial and Organizational Psychology: Principles for the validation and use of personnel selection procedures); TF-AC (International Taskforce on AC Guidelines). In addition, there are other standards; for example, specifications for certain countries, for example, in Germany, the DIN 33430, or the DIN Spec 91426 (standards for video-based methods of personnel selection) or AC-Standards: Standards of Assessment Center Method, developed by the Working Group Assessment Center (Arbeitskreis Assessment Center, 2016).

For instance, companies and selection managers in Germany can obtain a license for job-related aptitude testing according to DIN 33430 and, thus, stand out from other selection managers or companies in the labor market, by guaranteeing minimum qualitative standards.

By formulating requirements for personnel diagnostics, the DIN 33430 serves:

(1) as a guideline to plan and carry out selection processes
(2) as a yardstick to evaluate selection procedures
(3) as an instrument for securing and optimizing the quality of personnel decisions
(4) to protect candidates from personnel diagnostic procedures that are improperly applied (DIN, 2016, p. 13)

With the DIN 33430, a quality standard for selection procedures can be implemented to reduce poor decisions and the resulting individual, economic, or social consequences and costs (DIN, 2016, p. 13).

This procedure entails analyzing application documents and evaluating applicants in interviews, assessment centers, or tests, based on verbal operationalized selection criteria (e.g., What does giving constructive feedback mean in behaviors?) or KSAOs linked to numbers. Clearly formulated and delineated behavioral anchors with a distinctive scaling form are the basis for a rational-analytical selection process. This means, for example, rating operationalized behavioral characteristics with different numerical scores. Then, the concrete selection decision is based on a

numerical comparison of the applicants, where the applicant with the highest numerical score should be selected.

Specifically, the DIN 33430 demands defined and documented rules as a basis for results leading to a judgment and selection decision (DIN e.V., 2002, p. 8).

From the perspective of the DIN 33430, the interpretation of the results should leave no room for subjective or intuitive elements but calls for a clear operationalization of required competencies in behavioral anchors and explicit decision-making rules.

In addition, all hiring managers involved in conducting and evaluating selection procedures should have a profound knowledge of the following topics (DIN e.V., 2002, p. 11):

- Systematic observation in selection procedures (e.g., how to separate observation and evaluation of behaviors)
- Operationalization of required competencies (KSAOs)
- Definition and differentiation of observation units
- Observation, registration, documentation and scoring/evaluation
- Reference standards
- Rating/scaling methods
- Judgment-making forms (statistical and non-statistical)
- Distortion of perception and possible errors of observation (e.g., biases and selective perception)
- Quality criteria/test criteria such as objectivity, reliability, and validity, and how to ensure and implement these scientifically proven quality criteria, including knowledge of the results of relevant evaluation studies
- Interview classifications
- How to conduct interviews and use interview guidelines and questioning techniques
- Assessment areas
- Legal admissibility

The DIN 33430, therefore, demands an explicit, rule-guided selection procedure based on a carefully validated job and requirements analysis.

The DIN Spec 91426 for video selection systems refers explicitly to the DIN 33430, for example, transparency and fairness, behavioral observations, or document analysis. However, in essential details, it also goes beyond the DIN 33430; for example, it is stricter concerning the use of AI. The DIN Spec 91426 also prescribes a mandatory separation between information collection (observation) and assessment and requires the selection process to be rule-based. According to the DIN Spec, a purely intuitive assessment of applicants is, therefore, excluded when using video interviews. Furthermore, two independently proceeding assessors are also prescribed to assess all participants for each required criterion. The only exception is when two independent valid selection methods are used: for example, a well-developed interview and another

psychometric procedure, for example, a valid test, both of which independently assess the same requirement criteria. Only then can it be sufficient, if only one assessor evaluates and assesses the information collected in the interview. However, this exception must be justified.

Furthermore, it is the first German standard that also refers to the international standard on assessment services, ISO 10667, parts one and two. These two international standards provide guidance, in particular, on the rights and obligations that should apply between client and contractor. After all, good aptitude diagnostics is only possible if the contractor and client work hand in hand (Ackerschott, 2020).

#### 3.2.4.2 Separation of observation and recording of applicants from scoring and interpretation

In a systematic and controlled approach, behaviors of applicants should be observed and recorded descriptively and not in an evaluative or scoring manner. This means the first step is only for trained assessors to observe and note behaviors of applicants according to pre-defined rules (Höft & Kersting, 2018, pp. 33–35). This separation of observation and scoring is because scoring, interpretation, and evaluation influence our perceptions. Therefore, there is a risk that selection managers only perceive what supports their scoring. Thus, separating observation, scoring, and interpretation aims to reduce confirmation bias and self-fulfilling prophecies (see Section 3.5.2).

Observation is the systematic process of collecting data by perceiving, recording, documenting observed behaviors, and so on, during an interview or exercise, in an assessment center. An observation should be descriptive and linked to just observable facts. For example, in an interview or assessment center, specific behavioral observations should be noted accurately while observing (The applicant said ". . . .," or "During the first ten minutes, the applicant only looked at the table and made no eye contact," etc.).

A neutral, unbiased, non-judgmental, pure observation can only be achieved through slow thinking (see System 2 of Kahneman, Section 4.2.2.4). This act of scoring and evaluating people`s behaviors engages the human mind in interpreting what they are observing and is very exhausting, at least initially. Moreover, because usually fast and associative thinking (System 1) works reliably and automatically, people are usually not wholly aware of their judgments and interpretations, during the process of observation.

Suppose this procedure includes descriptive note-taking and behavioral checklists. Then, directly after the exercise, interview, and so on, the assessors must evaluate and score the perceived behaviors, using behaviorally anchored rating scales. Therefore, during the process of observation and recording, there should not be any interpretation, evaluation, or scoring of observed behaviors.

Thus, each assessor (selection manager) should interpret and rate his/her observations with number scores and draw a conclusion only after the interview or exercise in an assessment center.

#### 3.2.4.3 Data integration

In an integration discussion among assessors (also known as "consensus discussion"), assessors consider the behavioral construct-relevant information collected from the assessment components (recorded observations). This should be an open and deliberative discourse among all hiring managers or assessors.

The individual ratings, scorings, and interpretations by each hiring manager involved are integrated into an overall statistical result. For example, the integration may – in an assessment center, where assessors (hiring managers) observe behavior in exercises simulating critical job situations – result in exercise-specific dimension scores (scores of a specific criterion), exercise scores (the applicant's overall performance in one particular exercise will be evaluated), across-exercise dimension scores, and/or an overall assessment rating (the applicant's overall performance in all exercises will be reviewed in summary).

They should not consider information obtained outside the documented processes of the assessment center (International Taskforce on Assessment Center Guidelines, 2015, p. 1251). From a psychometric perspective, it should be a rule to evaluate only behaviors demonstrated in the exercises. For example, behaviors outside the exercises, at meals, or during small talk at the bar should not be assessed. However, whether this is realistic and whether humans can free themselves from impressions made outside the exercise situation are questionable (see Sections 3.7.3–3.7.5).

### 3.2.5 Reciprocal quality standards

#### 3.2.5.1 Social acceptance and ethics in selection procedures

Research shows that the quality of a selection process should not be evaluated only by "hard" economic criteria such as costs or scientific criteria like objectivity or validity, but also include more "soft" criteria such as social acceptance, fairness, respect, and judgment by the stakeholders (Deters, 2017, pp. 122–133). If the selection procedures are not accepted, adverse effects on the company's reputation are possible.

Social acceptance and judgments usually reflect the subjective perception of the selection process. Therefore, an organization should translate this system into understandable terms to win the acceptance of a selection system, especially for applicants, executives, and HR professionals. In addition, it should be perceived as fair, respectful, and non-discriminating (Ryan & Tippins, 2009, pp. 58–59).

Research on justice and fairness in selection processes and applicants' reactions to employment-selection systems demonstrate the importance of considering applicants' subjective reactions. Gilliland (1993, pp. 694–695) argues "that psychometrically fair selection procedures are important from business, ethical, and legal perspectives; applicants' perceptions of test fairness are also important from these perspectives. From a business perspective, reactions to selection procedures may influence the ability of the organization to attract and hire highly qualified applicants, which, in turn, can influence the overall utility of selection procedures. From an ethical perspective, organizations should be concerned with the effects of selection procedures on applicants' psychological well-being. For example, the perceived fairness of selection testing may influence the efficacy and self-esteem of rejected applicants . . . Finally, from a legal perspective, the perceived fairness of the selection procedure may influence applicants' decisions to pursue discrimination cases."

Steiner and Gilliland (2001) show that the perceived fairness of different selection techniques varies from culture to culture. "In some cultures, emphasizing how the valid technique is job-related may be important; in others, it may be more useful to focus on the opportunity to perform, the consistency of treatment, the possibility of applying again later, or on interpersonal treatment. That is, the arguments for justifying a particular selection procedure may not be the same everywhere" (Steiner & Gilliland, 2001, p. 135).

Schuler (1993) developed the concept of social validity. He suggests that four components make selection situations socially acceptable: 1. Information: relevant information about critical task requirements and characteristics of the organization (including social-psychological characteristics, culture, and goals). 2. Participation: direct or representative participation in the development and the execution of assessment programs exert control over the situation or one`s own behavior or relevant others. 3. Transparency: of the selection situation, the assessment tools, acting persons and their roles, behavioral expectations, the evaluation process and principles, for example, judgmental criteria. 4. Feedback: the content and the methods of communicating the results, that is, feedback in an honest, considerate, and understandable manner (Schuler, 1993, p. 12; see also Schuler & Stehle, 1985).

Research on selection as an acquisition process shows, and most of our interviewed HR professionals agree, that a high-quality selection process should lead to a positive candidate experience. This includes the candidate's feeling of being treated with fairness, trust, honesty, respect, and appreciation.

#### 3.2.5.2 Legal and ethical criteria in the selection process

Since the employment of people distributes life opportunities and supports economic, social, or cultural participation, it is essential to implement selection procedures that do not discriminate and exclude certain groups (Knobloch & Hustedt,

2019, p. 10). Therefore, the recruiting process must be designed to be legally and ethically correct. Keeping up with rules and taking steps to comply with relevant country-specific laws and ethical standards, governance guidelines, company policies, or other regulations are an expression of quality. Ryan & Tippins (2009, pp. 91–92.) distinguish between three legally related domains: a) discrimination against protected groups, b) regulations on hiring foreign workers, and c) privacy laws (See also Dunleavy et al., 2008; Myors et al., 2008 or – with a particular focus on India – Premarajan et al., 2008, or with a focus on Russia, Praslova, 2008).

### 3.2.6 Economics of quality criteria

Practical requirements demand that a selection procedure be easy to understand and implement, flexible in use and – especially in SMEs – consider organizational resources. SMEs that do not very often select and hire people and may not have the resources to meet all the requirements of a rational-analytical process pay particular attention to economic factors in using quality criteria. Therefore, the managers we interviewed from SMEs justify their approach that is often not scientifically proven with cost–benefit considerations.

### 3.2.7 Evaluation of selection processes – measuring the success of selection decisions

Evaluating the selection and hiring procedures and results is recommended to know whether personnel selection methods are successful.

The entire evaluation process should be planned carefully, and all aspects of the selection procedures should be examined. Approaches to evaluation exist at pre-selection, predictor selection (determination of job requirements and operationalization of predictors), selection decision rules and decision-making stages, and so on. Furthermore, the construct validity of the criteria should be assessed by reviewing what is generally defined as "success as a global leader." From a psychometric perspective, it is also necessary to assess predictive validity, and, thus, the success of a candidate in the role, for example, after one year, should be evaluated (see predictive validity, Sections 3.2.1; 3.7.7). Furthermore, the evaluation should consider the predetermined job requirements, decision rules, and other regulations (see Sections 3.2.3 and 3.2.7). Finally, the selection process costs and the potential economic benefits should be evaluated. Based on these findings, practical implications can be derived.

However, an evaluation should not only be conducted for psychometric or economic reasons but also to question and assess the quality of managers' intuitions (Kahneman & Klein, 2009).

Evaluating personnel diagnostic decisions and, thus, developing selection expertise in practice is also to be questioned, because selection managers rarely evaluate the success of their selection decisions and their experiences, systematically. In addition, it is problematic that possible feedback on the outcomes (especially performance on the job) can only ever cover those who have been selected. Rejected applicants, who might have done the job well, are not considered in validity and evaluation studies (Koppers, 2013, p. 48; Kanning, 2004, p. 75).

## 3.3 Implementation of rational-analytical selection methods

As research indicates that a rational-analytical selection procedure is more appropriate and successful than others, normative recommendations concerning selection procedures may be warranted (Allinson & Hayes, 1996, p. 119).

To secure scientifically proven quality in personnel selection, actions should address two areas: 1) optimization of personnel selection processes (instruments, tools, procedures, etc.) and 2) improvement of the competencies of recruiters and, especially, selection managers.

To be successful in these two areas, the introduction of psychometrically guided selection procedures requires taking a closer look at four different components, according to Rogers' conceptual framework (Rogers, 2003; Deters et al., 2020):

1. Characteristics and specifics of the social system (e.g., specifics of large enterprises and SMEs, and environmental factors such as culture)
2. Characteristics of the innovation to be introduced (e.g., psychometric procedures such as DIN 33,430, the ISO 10,665, cost–benefit considerations, and perceived complexity)
3. Support measures for implementing the innovation (develop competencies of selection managers, because these may substantially influence the perception of rational-analytical procedures, familiarity with these procedures, perceived urgency, and pressure of the introduction, e.g., by stakeholders)
4. Communication of psychometric or rational-analytical selection procedures

Since components 1–3 have already been discussed on the previous pages, the following focuses on component 4 (communication).

**Communication of scientific research findings:** The aim is to clarify the advantages and benefits of rational-analytical methods for companies and hiring managers. Science has to prove that companies that adhere to the psychometric standards make fewer misjudgments, reduce early turnover, get a higher level of commitment from their employees and, overall and in the long term, reduce their costs for successful personnel selection, become more competitive, and increase their economic success.

In cooperation with practitioners, scientists should develop instruments that support the evaluation of selection procedures. Also, easy-to-understand and practical guidelines that explain the techniques and the benefits of high-quality selection processes to a broad public, including how initial costs can lead to significant long-term gains, should be offered (Reimann et al., 2009, p. 157).

Through increased face validity, practitioners could be convinced, for example, that cognitive ability tests have good prognostic validity (Schmidt & Hunter, 1998; Schmidt et al., 2016). And that a combination of different psychometric procedures, such as a valid and reliable cognitive ability test and a structured interview, have very high predictive validity and will give the most reliable prognoses for future professional success (Schmidt et al., 2016).

Where science is viewed rather suspiciously, there is need for advocates who are trusted, in practice. What are needed are examples of successful companies, including SMEs, that transparently and openly publish their experiences with psychometric procedures and communicate the benefits they have experienced. Kersting (2009, pp. 154–155) describes the DIN 33430 as established and mentions various companies that already base their personnel selection on that standard. These organizations can serve as role models and radiate a signal effect. The increasing mention of the added value of psychometric selection procedures in practitioner literature, specialized fairs, social media, and so on, can lead to a growing acceptance of these procedures, in practice (Deters et al., 2020).

## 3.4 Rational-analytical requirements for the hiring managers

### 3.4.1 Requirements of the DIN 33430 for selection managers

Our research confirms that specific knowledge of psychometric research results and, thus, of the possible added value of these rational-analytical procedures is little known, in practice.

Since intuition and rational-analytics interact and complement each other and create synergies, practitioners must be aware of how intuition, emotions, and rational-analytical procedures can be used constructively.

Since the competencies of selection managers affect the design and success of a personnel selection process, the core requirements exemplified by the DIN 33430 are described.

The DIN 33430 strives to increase the transparency of science-based personnel selection procedures and their adequate use, in practice (DIN 2016, p. 6). The requirements of the DIN 33430 are based on the three pillars: (1) process, (2) procedure, and (3) qualifications.

Although the DIN 33430 is primarily a process standard relating to the design of selection procedures, it also guides determining desired qualifications and

competencies for hiring managers. According to Kersting (2016), the process and procedure are necessary elements but not sufficient for a high-quality selection process. In fact, people and their qualifications are the core elements of a high-quality personnel selection, because they determine whether and how professional the corresponding methods and personnel selection procedures are designed.

The DIN 33430 distinguishes between qualification profiles of responsible personnel diagnosticians, observers for behavioral observation and assessment, and observers for direct oral interviewing (DIN 2016, pp. 22–23). Thus, it places the most comprehensive demands on the selection manager who designs, and is responsible for, the entire personnel selection process. Here, the DIN 33430 standard requires proof of defined knowledge and experience but does not specify the required level of proficiency, weighting, or compensability (Kersting, 2016).

Quality assurance requires transparent and verifiable criteria that prove selection managers' skills, experience, and thus expertise. A selection manager may demonstrate appropriate competencies through an independent examination and a related certification. However, since this cannot be introduced on a mandatory basis in practice, the DIN standard lists 45 qualification elements (Ackerschott et al., 2016; DIN 2016, pp. 22–24).

According to psychometric research results, qualified hiring managers should know a selection procedure thoroughly. Also, they should have supervised experience in the development, planning, construction, and controlled administration of selection procedures and their evaluation.

Based on the recommended process of personnel selection and the tasks and responsibilities involved, the following competencies, in particular, are required:

a) For the professional development of requirements analyses, knowledge of the following is necessary:
   - job and requirement analysis, including analysis methods;
   - methods for integrating the results of the analysis in a requirements profile;
   - methods for the operationalization of requirement criteria;
   - the influence of biases, stereotypes, and so on on a requirements analysis and vice versa;
   - the culture dependency of requirements (to avoid that only members of a particular culture can meet the requirements).

b) For the professional use of selection processes, hiring managers should know of
   - procedures, instruments, and methods of selection and their opportunities and limits;
   - statistical and methodological principles (for the selection and interpretation of procedures and evaluation);
   - classical test and item-response theories, measurement theories (types of tests and measures, e.g., cognitive ability, personality, and motives);

- design and construction fundamentals (e.g., how to construct high-quality interviews, assessment centers, and interpret applicants' behaviors);
- how to conduct a selection procedure in conformity with the law and ethical standards (legal and ethical constraints on personnel selection such as data protection);
- conditions and contexts of the implementation of specific selection procedures;
- quality criteria, for example, what do objectivity, validity, reliability, fairness, and so on mean? Knowledge of research results and relevant evaluation, for example, the predictive validity of specific selection procedures;
- writing a report on the results of the personnel selection;
- accurate cost estimation for the different selection methods and instruments;
- evaluation methods, including cost–benefit aspects or performance review.

c) For the professional application of behavioral observations and assessments, knowledge of the following is necessary:
   - the term "observation" (and the difference between observation, interpretation, and evaluation);
   - how to observe systematically;
   - operationalization of the job requirements (e.g., behavioral anchors);
   - definition and delimitation of observation units;
   - documentation of observations;
   - evaluation and assessment of the observations;
   - reference standard for the assessment of scales (e.g., behavioral anchors);
   - the cultural influence on human behavior and job requirements;
   - the influence of stereotypes, prejudices, bias (e.g., gender, age, confirmation, and religion);
   - rating and scaling procedures;
   - types of judgment formation (statistical and non-statistical).

d) For the professional application of selection interviews, knowledge of the following is necessary:
   - interview classification;
   - handling and application of interview guidelines;
   - interview techniques and how to formulate questions effectively and legally, and ethical compliance;
   - interview-related assessment criteria;
   - distortions of perception, stereotypes, bias, and so on;
   - dealing with self-representation and impressions management strategies of applicants;
   - interpretation of observed behaviors.

### 3.4.2 Further requirements for hiring managers beyond the DIN 33430

The DIN 33430 more or less formulates functional skills and does not specify other criteria, which see personnel selection as an acquisition process. A hiring manager should understand how and why individuals enter and move within an organization.

Thus, they need:

- **Communication skills:** If hiring managers can't communicate clearly and effectively (orally, nonverbally, in writing, by phone, video, email, etc.), if they are not versed in active listening and showing empathy, expressing appreciation and respect, building trust, and so on, they will not be successful. They must be able to communicate unambiguously and interact with every candidate, regardless of the position to be filled, the hierarchical position, or the applicant's personal background.
- **Marketing and relationship-building skills:** The hiring manager is a crucial link between a company and a candidate. Depending on their impression, they can either attract or discourage the candidate. Thus, hiring managers think of selection processes as creating a relationship between a candidate and a company (represented by the hiring manager). They know how to sell the position and the company, create a positive candidate experience, and act to the benefit of both parties.

Hiring managers are also expected to have:

- **Technological skills:** With the whole world going increasingly digital, HR managers need the ability to adapt to new technology such as AI, using algorithms.
- **Learning skills** (e.g., a commitment to ongoing learning): This includes the ability to reflect on oneself, again and again, to obtain feedback, and educate oneself continually. In particular, HR managers must understand and implement new HR research findings connected to the current trends in the HR field, selection procedures, and so on.

## 3.5 Situational factors and perception distortions as reasons for rational-analytical selection procedures

Research shows that personnel selection decisions can be colored by context-specific factors, such as time pressure or unconscious bias that distorts perception and may, subsequently, lead to discrimination and unfairly hurting people's life chances. These possible negative consequences are significant reasons for a rational-analytical approach, which mitigates the dark side of biases, stereotypes, intuitions, and emotions. In addition, rational-analytical methods promise more objectivity and, thus, reduce arbitrariness and discrimination in personnel selection.

The risk of discrimination against applicants exists in all phases of the selection process, particularly in the first phase, that is, before someone is invited for a personal interview; therefore, it is recommended to anonymize application documents (Antidiskrimierungsstelle des Bundes, 2012, p. 3).

Which situational factors influence the subjective perception of hiring managers and, thus, the selection judgments and decisions, and which distortions of perception can occur in the selection process are described below (Figure 5; for a detailed summary, see Kanning, 2019, pp. 57–85).

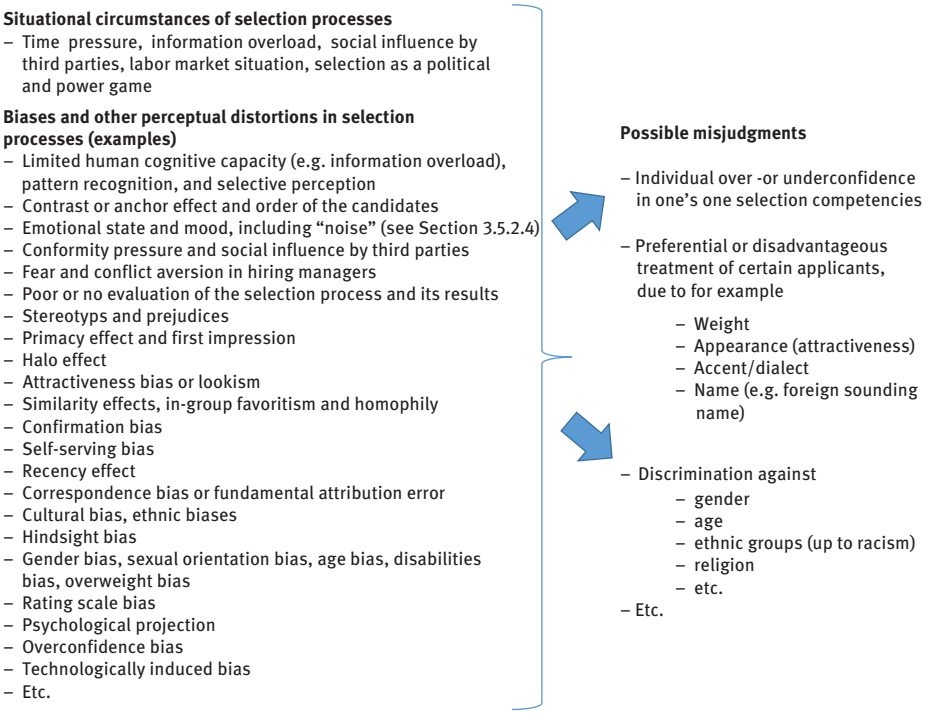



**Figure 5:** Problems of judgment formation in decision-making in selection procedures (based on Kanning, 2015, p. 139).

### 3.5.1 Situational circumstances of selection processes

**Time pressure:** Many selection managers have a heavy workload and act under time pressure. As a result, application processes are not carried out with the necessary care and intensity, and, for example, requirement profiles are not – for example, for time reasons – developed and used in a written form (for every role), although they may be present as inner lists or guidelines in the minds of involved selection managers.

Thus, clearly defined and transparent selection criteria are often missed. Or interviews are unstructured, lacking interview guidelines. This makes it more challenging to compare applicants, and the quality of personnel selection can suffer (Kanning, 2015, p. 142).

**Information overload:** Selection managers have to process a lot of information, for example, in an assessment center, observing two or more candidates simultaneously in a group discussion on five or more competence dimensions while documenting their observations. In that case, this will inevitably lead to automated processes of information processing. However, studies show that the validity of such procedures decreases (Lievens, 2001; Lievens & Conway, 2002).

This problem lies not only with the observers but also with the assessment center developers or HR managers responsible for the process, who put too much pressure on the assessors. The principle "less is more" applies in an assessment center and an interview. It is diagnostically more meaningful to observe fewer competencies than too many (Kanning, 2015, p. 142).

**Social influence by third parties:** Often, selection managers are influenced by social context and pressure from colleagues or superiors to align their judgments with colleagues/superiors, even if they do not correspond to their selection results (Kanning, 1999, p. 249).

Especially in less structured and non-standardized selection procedures, where, perhaps, no clear requirement profile is used, it is relatively easy for selecting managers to exert social influence on each other. This happens, for example, before an interview, by exchanging information about which candidate is favored or by exchanging information about observed candidates, during an assessment. A bit more subtle but equally inappropriate is the social pressure some HR professionals face when they know that influential, higher-ranked executives or groups prefer a particular candidate. This is particularly problematic in selection procedures with internal applicants (Kanning, 2015, p. 142; see Section 3.7.5).

Therefore, it is essential that each selection manager makes his/her observations and evaluations independently and that the observations and evaluations are recorded in writing.

**Labor market situation:** Empirical studies of people's decisions show that human preferences for alternative options in choice situations depend very strongly on the number and type of options. If there are many options to choose from, the decision situation is different from one where there are hardly any options (Tversky & Simonson, 1993).

Depending on the situation, particularly the labor market or individual circumstances (e.g., applicants urgently looking for a job because they have been unemployed for an extended period), an applicant may feel dependent on the company's goodwill or hiring manager. Such situations, also known as employers' markets,

can lead to a loss of confidence in the applicant, such as accepting procedures and answering questions that are not appropriate or not requirement-oriented.

If specific competencies and professional qualifications are in short supply in the labor market, the situation is reversed for applicants with these sought-after competencies. In the case of an employee or applicant market, the applicant has the market power. This causes companies to make more intensive efforts to recruit these people and hiring managers to appreciate the recruiting process. In such situations, selection procedures are increasingly adapted to the wishes and needs of the target groups; this can mean that requirement standards are reduced, and a classic selection situation becomes more of an application situation for companies.

**Selection as a political and power game:** Power and politics can also be factors in self-serving bias and anxiety about possible competitors for the hiring managers. Certain personnel selection decisions, for example, rejection of promotions or outstanding applicants, can be influenced by individual political motives of the selection manager. For example, suppose selection managers are consciously or unconsciously afraid that outstanding applicants could threaten or even oust them from their position, there is a risk that these applicants will be met with great skepticism.

Lee et al. (2015, p. 790) show that decision-makers prefer applicants who are considered more helpful to them personally and are less likely to hire applicants they expect might compete with them, or even endanger their job or career. They might even use the opportunity to make the candidates look bad in the selection process and to argue against them by asking tough questions and using inappropriate arguments (Bozionelos, 2005, pp. 1606–1625; Apelojg, 2010, pp. 42–43; see also Marlowe et al., 1996).

From an evolutionary biology perspective, fear of competition also plays a role. For example, a laboratory study by Luxen & van de Vijver (2006, p. 3) shows that women reject more attractive female applicants than men and suggests that women give priority to supposedly unattractive women. However, a further study with corresponding HRM professionals could not confirm these findings.

If such factors influence personnel selection decisions, even the knowledge of high-quality personnel selection and psychometric procedures is of little help, because they are, consciously or unconsciously, undermined.

### 3.5.2 Biases and other perceptual distortions in selection processes

*The distance from others, where this awareness moves us, becomes even greater when we realize that our outside form doesn't appear to others as to our own eyes. Humans are not seen like houses, trees, and stars. They are seen with the expectation of being able to encounter them in a specific way and thus making them a part of our own inside. Imagination trims them to suit our own wishes and hopes, but also to confirm our own fears and prejudices. We don't even get safely*

> *and impartially to the outside contours of another. On the way, the eye is diverted and blurred by all the wishes and fantasies that make us the special, unmistakable human beings we are. Even the outside world of an inside world is still a piece of our inside world, not to mention the thoughts we make about the inside world of strangers and that are so uncertain and unstable that they say more about ourselves than about others. How does the man with the cigarette see an exaggeratedly upright man with a gaunt face, full lips and gold-framed eyeglasses on the sharp, straight nose that seems to me to be too long and too dominant? How does this figure fit into the framework of the pleasure and displeasure and into the remaining architecture of his soul? What does his look exaggerate and stress in my appearance, and what does it leave out as if it didn't even exist? It will inevitably be a caricature the smoking stranger forms of my reflection, and his notion of my notional world will pile up caricature on caricature. And so we are doubly strangers, for between us there is not only the deceptive outside world, but also the delusion that exists of it in every inside world.* (Excerpt from *Night Train to Lisbon* by Pascal Mercier, transl. Barbara Harshav, pp. 79–80)

What people perceive and sense is shaped by their needs, desires, intuitions, and associated emotions. And, what is important to one personally is recognized better and more quickly. To exaggerate, people perceive the world as they themselves are. The American artist David Lynch (2007, p. 21) says: "The world is as you are."

In addition, concrete judgments are influenced by how specific information is prepared and presented. Thus, decisions turn out differently, although the facts and data, for example, the factual content of the information in an interview, does not change, for example, the presentation of professional experience by the applicant.

One of the aims of the rational-analytical approach in personnel selection is to reduce the influence of hiring managers' intuitions and emotions. The primary reason is that intuitions and feelings can lead to bias, prejudices, and discrimination. Although, on the one hand, this is because intuitions and emotions are primarily based on individual experiences, on the other hand, they can also be attributed to the limited processing capacity of the human brain or evolutionary developments (e.g., xenophobia).

The critical reflection on corresponding biases, stereotypes, and so on, serves not only to reduce discrimination or promote fairness and justice but also to improve the economic success of organizations. For example, a study by Hardy et al. (2021), which specifically addresses the issue of gender discrimination, highlights that if the hiring process is not conducted as fairly and objectively as possible, even a small amount of gender bias in hiring can be costly to employers and produce significant rates of hiring discrimination and productivity loss.

It must be emphasized that the phenomenon explicitly addressed in the following is not a conclusive enumeration of possible unconscious distortions of perception. Without claiming to be complete, important distortions of perception and their bases are presented below.

#### 3.5.2.1 Limited human cognitive capacity, pattern recognition, and selective perception

The cognitive processing of information, the evaluation of a situation or a person, and the process of decision-making are not only based on a rational analysis of the objective information available to an individual, but are also influenced, filtered, and distorted by various perceptions of these data (Tversky & Kahneman, 1981, p. 453; Tversky & Kahneman, 1973, p. 207).

Human perception is selective, and people would be overwhelmed if they were aware of everything around them**.** Selective attention filters information and directs awareness to (subjective) relevant stimuli, while ignoring irrelevant environmental stimuli. This is an essential process, as there is a limit to how much data can be processed at a given time. Selective attention allows us to tune out insignificant details and focus on essential information.

Selective perceptions occur in every human being as a necessary mechanism to cope with the complexity of the environment (Kanning, 1999, pp. 254 and 257).

Research shows that human brains fill in missing information with creative guesses based on experience and pattern matching. Our memory system strives to be efficient in not cluttering our minds with unnecessary detail. For example, the Russian neuropsychologist Alexander Luria studied a patient with a superior and supercharged memory: he could repeat word-for-word speeches that he had heard only once, complex mathematical formulas, or long sequences of numbers. But, he could not form abstractions because he remembered every detail as distinct. Moreover, he had trouble recognizing people because his brain could not generalize and abstract. Also, when he saw the same faces, he saw different faces because human faces change with other expressions. Thus, the ability to generalize, see patterns, and abstract from detail is beneficial to our survival. And as humans age, their brains become better at seeing patterns, extracting generalized common points from prior experience, and seeing the big picture (Levitin, 2020, pp. 33–45).

What a person perceives depends on the processing of incoming stimuli. Only after a stimulus has been perceived can it be evaluated. Which incoming stimuli are perceived depends on the viewer's attention to different stimuli. Salience and, thus, the subjective consciousness and meaning of a stimulus and the accessibility of the stimuli influence human attention.

Thus, selective perception means to perceive only particular competencies or characteristics from a set of total impressions, more or less ignoring other stimuli. Thus, people tend to see what seems essential or true for them but may overlook contradicting perspectives.

In addition, the human ability to interpret and give meaning to perceived objects is also selective. Therefore, the same information about an applicant can be evaluated very differently, depending on the hiring manager's experience, knowledge, socialization, age, gender, cultural background, interests, goals, and so on.

Most cognitive, social, and organizational psychology theories support the idea that individuals use different information processing networks (i.e., schemas), motivations, demographic and experience backgrounds, values, personalities, and attitudes to bear on their interpretations and reactions to social stimuli and perceptions (Nishii & Wright, 2007, p. 9). According to the theory of social cognition (Fiske & Taylor, 2021), it can be assumed that the perception and interpretation of experiences vary from person to person, depending on individual cognitive models, schemas, values, and emotions. "People attach different meanings to social stimuli based on differences in the cognitive frameworks that they use to make sense of social information" (Nishii & Wright, 2007, p. 8).

A person's perception differs from object perception, because it involves more complex psychological mechanisms and cognitive processes. For example, people look at others and attribute-specific characteristics, intentions, emotions, values, and dispositions. These inferences, in turn, influence the relationship and interaction with that person.

What humans perceive and how they perceive is also influenced by the cognitive capacity of the human brain. Unfortunately, the human brain has limited reception-, memory- and information-processing capacity and is also subject to fatigue and attention or concentration difficulties. This limited capacity is like a bottleneck, restricting the flow of information.

Because of these limited mental resources and to save energy, the human brain tends to categorize perceptions. At any given time, the human brain is bombarded with infinite stimuli. Thus, people tend to categorize and encode all perceptual stimuli and finally assign them to known cognitive schemas (Pendry, 2007, p. 120). Assigning and translating stimuli into known structures and schemas enables the individual to deal with the many stimuli that affect them and not be overwhelmed by their complexity. However, it also carries the risk of information and experiences being assigned to situationally inappropriate categories and schemas, thereby distorting the perception and interpretation of what has been experienced (Pendry, 2007, p. 120).

Thus, the assignment and categorization of the same perceived stimuli into different underlying cognitive structures and schemas is the reason for the divergent and subjective interpretations of and reactions to experiences and moments (Fiske & Taylor, 2021). Without an efficient method of processing and making sense of this information, our brains would become overloaded. Although generalizations about people will not accurately consider the characteristics of a particular group member, humans can navigate their social life more efficiently by sorting stimuli into categories. Thus, this categorization frees up mental resources for other tasks.

Two processes occur during perception and candidate assessments by observers: an automated and a controlled process. Since a person's cognitive capacity is too limited to grasp a situation as a whole and assess it comprehensively, automated processes and shortcuts are needed to think and act quickly. These automated assessment

processes are subconscious and require only a few cognitive resources; they occur without intention or effort and do not impair other cognitive processes (Fiske & Taylor, 2021).

On the other hand, a controlled process occurs when the observer consciously influences the assessment process. Conscious processes require effort, constant attention, and time. In addition, conscious processes have a clear intention (Fiske & Taylor, 2021).

Intuitive judgments are formed by pattern and similarity recognition. People perceive a specific constellation of impressions and search unconsciously for similar constellations in their life experiences. Previous decisions will be activated, which to some extent, proved valid. People then continue working with these judgments. Depending on the similarity and pattern recognition type, these intuitive judgments, more or less, fit the new situation.

These intuitive cognitive processes in which individuals' thoughts, feelings, and actions are subject to a certain automatism, make it possible for previous life experiences, internalized thinking, and behavior patterns to be applied to new situations, without further processing effort.

On the other hand, rational-analytical cognitive processes are activated when new or more complex contexts require a higher degree of attention. Thus, although both intuitive and rational-analytical information processing systems are continuously active, the intuitive system is usually dominant. As a result, unconscious bias occurs through this unconscious form of information processing (Kahneman et al., 2011, p. 52).

All bias and perception distortions are a kind of selective perception.

Since the human brain wants to save energy and avoid effort, human information processing in everyday life is primarily based on unconscious and automatic pattern recognition, schemas, and other categorizations. In personnel diagnostics, this is a possible source of errors (Höft & Kersting, 2018, p. 51) and distortions of judgment stemming from the hiring manager's unconscious stereotypes, prejudices, or biases (Kanning, 1999, p. 257).

#### 3.5.2.2 Contrast or anchor effect and order of the candidates

The contrast effect is an unconscious bias, when candidates are judged compared to one another instead of being assessed individually and independently. The perception of hiring managers is altered once they compare candidates; they tend to judge them relative to each other rather than on their own merit. CV screening is prone to the contrast effect, since it's natural for selection managers to assess candidates relative to the CV. Thus, hiring managers may perceive greater or lesser differences between candidates than actually exist. A previously assessed (in a CV or interview) or simultaneously observed candidate (in an assessment center) is seen as an anchor for hiring managers to contrast other candidates with this "anchor candidate." For example, a

hiring manager might grade a mediocre candidate more harshly after interviewing an excellent candidate. Similarly, weaker candidates may be made to look strong, and a good fit may be overlooked in a more substantial candidate pool. This effect can also occur if several applicants are interviewed on the same day; the first and the last are remembered better and usually more favorable (Höft & Kersting, 2018, p. 57).

#### 3.5.2.3 Emotional state and mood of the selection manager and applicant

The human brain may interpret the same stimuli in one way or another. This has to do with the emotional state. Attention varies, depending on the current state of mind, and specific characteristics are considered more important than others.

Thus, the emotional state and, subsequently, the mood, influence the judgment and decision-making process. If the decision-makers are in a positive mood, they will use this – unconsciously – as additional information and evaluate candidates more positively than when they feel unhappy (Werth, 2004, p. 28).

In specific situations, for example, under time pressure or stress, people will enter into a conversation differently and focus on aspects other than while being in a good mood. Hiring managers will behave differently as interviewers if they have had a relaxing and stress-free day or something they were pleased about. But, if they have just had some trouble or conflicts, they may behave in a less friendly manner. Or if someone has received very positive information shortly beforehand, they will go into a conversation differently than if they had received very negative information. Someone sad will be blind to sunshine and focus on aspects of the environment that reflect their own misery (Pfister et al., 2017, pp. 301–315).

> It is a common belief that the way people perceive the world, process information, and solve problems is influenced by emotions and moods. For example, probably all of us have experienced that when we are in a depressed mood, our attention appears to be focused rigidly and narrowly, whereas when we are in a happy mood, our minds seem to bubble over with ideas and sometimes far-fetched associations. Such everyday impressions are supported by a growing body of empirical evidence showing that positive and negative moods are accompanied by qualitatively different information processing modes . . . For instance, individuals in a positive mood, compared with those in a negative mood, produce more unusual associations (Isen, Johnson, Mertz, & Robinson, 1985), show improved performance on tests of creative problem solving (Isen, Daubman, & Nowicki, 1987), prefer heuristic over exhaustive decision-making strategies (Isen & Means, 1983) (Bolte et al., 2003, p. 416).

A short-lived emotional state can trigger a mood. However, it must not relate only to a particular situation, because it can be a longer-lasting feeling that colors the experience more positively or negatively. While a positive mood leads to optimism, a sunnier outlook, or risk-taking, a bad mood leads to rejection, pessimism, or negative relationship-building. While a specific stimulus triggers emotions, moods can often occur without an apparent cause (Scherer, 2015, p. 705).

Emotional states, moods, and thus, the perception of others can also be triggered by particular substances such as alcohol or other drugs.

A theoretical approach to explaining the relationship between emotional state and mood is the "Affect-infusion theory" of Forgas (1995, 2000). According to this theory, emotions cause certain moods. "Affect infusion" means that affectively loaded information (e.g., positive information from the CV) becomes incorporated into the judgmental process of hiring managers, influences their thinking, feeling, and behavior, and thus colors their judgments.

Also, the emotional state of the applicant influences the mood and, thus, behaviors of hiring managers and vice versa.

In less stressful situations, applicants who are nervous and under pressure may not act as confidently as they might. In addition, applicants in an observation situation, for example, in a role-play within an assessment center, may behave differently than they would in a relaxed situation (Kolominski, 2009, p. 75). When candidates behave in the selection situation as they think they should act – use so-called impression management techniques or behave according to supposed social desirability – it is challenging to draw predictively valid conclusions from this behavior (Höft & Kersting, 2018, p. 54. But see "Validity and Job Performance" in Section 3.7.7. Ingold et al., 2015a, show that impression management in interviews did not negatively affect job performance).

#### 3.5.2.4 "Noise" and decision-making

In their book *Noise – A Flaw in Human Judgment*, Kahneman, Sibony, and Sunstein (2021) show how human judgment and decision-making are influenced and distorted by various invisible factors and wherever there is judgment, there is noise (Kahneman et al., 2021, p. 12). Judgment noise means that when judgments should be identical, people judge the same object differently at different times. Noise, as being hungry, whether Monday morning or Friday afternoon, rainy or sunny outside, clouds objective judgment and leads to variability or errors in judgments. Also, Loewenstein (1996) shows that people decide and behave as "other persons" when influenced by visceral factors such as hunger, thirst, and pain. Many decision-makers are not aware of these influences that may distort their judgments. And, people are susceptible to noise in many decision-making fields, including performance reviews or personnel selection, but commonly ignore its role in their judgments. For example, judges in the United States tend to be significantly more likely to suspend a sentence immediately after breakfast or lunch.

In contrast, they tend to rule more harshly when hungry. Therefore, it is essential to detect noise and be aware of these influences as a decision-maker. Furthermore, if different colleagues come to very divergent judgments, these should be openly addressed and reflected upon. If many people come to widely differing results in the same situation, it can be assumed that there is much "noise." In addition, the influence of noise can be reduced by having several people participate in decisions and aggregating individual decisions in this way. Thus, decisions can be

improved if managers identify and reduce the "noise" influencing them. Using that approach, people can reach "decision hygiene" and increase the reliability of decisions.

#### 3.5.2.5 Salience and decision-making

Salience is an essential human cognitive ability to detect things of possible importance in a stream of sensory information; thus, it supports situational awareness. If specific information is highly emotional to an individual, it gets more salience. This ability has significant advantages (e.g., people can tune their salience to achieve specific goals) but can also lead to invalid perceptions and judgments. Thus, people often do not decide "rationally" when their attention is distracted or even misdirected. Bordalo et al. (2012, 2021) show that salient stimuli attract human attention "bottom-up" automatically and involuntarily, due to their high contrast with surroundings. Bottom-up attention is critical for survival, but bottom-up attention can distort rational-analytical perceptions and, thus, decisions, by distracting decision-makers from their immediate goals or specific choice attributes. Human decision-making beyond the rational- analytical can, thus, often also be explained by attention deficits and, thus, misdirected "salience."

#### 3.5.2.6 Conformity pressure

Judgments of hiring managers can be influenced by social contexts, for example, through pressure from colleagues, superiors, or the majority of assessors (Kanning, 1999, p. 249). Conformity is the act of matching attitudes, beliefs, and behaviors to those of others or societal norms. In selection processes, pressure to conform can lead lower-ranking selection managers or recruiters with less experience to adjust their selection judgment to a higher-ranking manager or the majority of the hiring managers (Höft & Kersting, 2018, pp. 57–58). Sometimes, this pressure is called the "bandwagon effect," the tendency to follow the mass instead of standing by an individual point of view, or even the results of rational-analytical selection procedures.

Thus, conformity pressure can lead to poor selection results. To counteract this, instructions for the hiring managers or assessors (e.g., for preparation, implementation, and evaluation, of hiring decisions) should be carefully prepared and continuously evaluated (Höft & Kersting, 2018, p. 58). In addition, a professional moderation of integrating individual appraisals and scorings into an overall result can support the benefits assigned to assessments made by individual selection managers. But these procedures may be useless, if hiring managers are conflict-averse and do not dare to take a clear position.

#### 3.5.2.7 Fear and conflict aversion in hiring managers

The reluctance to acknowledge one's impressions, giving in to real or perceived pressure from higher-ranked supervisors or line managers, or subordinating oneself to the views of the majority of assessors may be attributable to a fear of conflict and a limited ability to deal with conflict.

When evaluating and selecting internal candidates, in particular, fear and conflict aversion can play a decisive role. Conflict-averse selection managers may fear exhaustive and controversial discussions or be confronted with other views, shy away from precise positioning, and so on. To avoid conflicts for reasons of harmony and to be accepted and recognized by others, these conflict-averse managers hold back their own impressions and judgments and subordinate themselves to others.

#### 3.5.2.8 Little or no evaluation of the selection process and its results

As Kanning (2015, p. 143) states, the validity of selection decisions is only rarely evaluated systematically, in practice. As a result, HR managers, often, do not receive detailed feedback on the possibilities to optimize selection processes and their decision-making behavior.

Suppose the prospective candidate's superior, who makes the final decision to employ the candidate, participates in the selection process and positively assesses a candidate. An HR manager`s tendency may be to positively evaluate this candidate, since otherwise, the superior could critically question their decision-making and selection competence.

Another aspect of an imperfect evaluation process is the "reinvention" of memory. If it turns out in practice that an applicant is not as successful as was hoped for, there is a risk that hiring managers will "revise" their memory of the selection process. For example, they may say they were actually opposed to the hiring but decided in favor of the applicant to give them a chance, or because other managers saw this applicant positively. Due to this denial of what took place in the hiring process, the manager is deprived of the chance to learn something (Kanning, 2015, p. 144).

Possible errors in selection processes are often only reluctantly admitted, if they do not match the infallible self-image of those who claim to have an excellent knowledge of human nature. Or, if these selection managers are convinced, always make the right choice, or if the error culture in that organization is poorly developed, employees feel the need to hide their mistakes. Thus, hiring managers who question themselves, ask for feedback, carry out systematic evaluations of their decisions, and reflect critically on their decisions are needed (see Section 2.6).

#### 3.5.2.9 Stereotypes and prejudices

Social categorization and generalization provide a sense of order and predictability that people can rely on, to guide their interactions with others. For example, the

stereotype that the elderly are deaf causes people to speak loudly in their presence; the stereotype that Germans are reliable, follow the rules, have little humor, and plan very systematically influences expected behaviors and how they are met. Stereotypes are based on the belief that specific attributes, personality characteristics, and behavioral tendencies are typical of particular social group members. Categorizing people this way, often encompasses visible features such as skin color, gender, age, and nationality.

Stereotypes are socially constructed and, sometimes, may be based on personal experience. They arise from other people's remarks, the media, or reading about different cultures. Reducing the complexity and diversity of a culture to a few characteristics or dimensions (e.g., Hofstede dimensions; see Section 7.2.4.1) represents a criticism of the cultural models or theories. This reduction of complexity promotes stereotypical thinking and may lead to distortions in the perception of a culture (Büter, 2010, p. 263; Schroll-Machl, 2007, p. 152).

Stereotypes are developed and integrated automatically and unconsciously into a person's thought patterns. They can be positive or negative, influencing what people perceive, how they perceive something, and how they decide and behave, treat specific people, and so on.

Stereotypes can be implicit and explicit. Implicit stereotypes are unconsciously activated in judgment and decision-making, without a person being aware of them.

While stereotypes are the cognitive components of attitudes toward a social group, prejudices are the affective components and value-laden feelings associated with these attitudes. These feelings can be positive or negative. Thus, stereotypes can often lead to negative prejudices and antipathy toward a person, based on perceived group affiliation, for example, with a specific religion, gender, sexual orientation, social class, nationality, ethnicity, education, sports team, and age (Derous & Ryan, 2019, p. 114).

Stereotypes can lead to biases, such as gender bias, age bias, or ethnic origin bias. Bias is a (positive or negative) inclination for or against one person or a group, for example, bias against foreign applicants. Biases such as cognitive shortcuts are regularly learned and highly dependent on variables such as socioeconomic status, ethnicity, educational background, and nationality.

Even at a young age, people learn to distinguish between those who are like them, their "in-group," and those who are not like them, their "out-group." This can provide a sense of identity and safety on the plus side. However, on the negative side, bias can result in prejudgments that lead to discriminatory practices. Thus, discrimination is the behavioral consequence of stereotypes, prejudices, or biases, for example, disability discrimination, age discrimination, gender discrimination.

When an applicant is assessed, categorizations are triggered, enabling impressions to be processed quickly and judgments made, without significant effort (Cocchiara et al., 2016, p. 467). In this case, a person is perceived as representing a specific social group. Consequently, the properties attributed to this group are

projected on this person, and related stereotypes and prejudices are activated (Kanning, 2015, pp. 140–141).

Experiments with anonymous applications and many other studies have shown that applicants are discriminated against, based on their name, gender, age, and so on. For example, in Germany, applicants with a German-sounding name are more likely to be invited to interviews than applicants with a Turkish- or Arabian-sounding name; similar experiences have been made in many other countries with the corresponding results (Segrest Purkis, 2006; Böschen et al., 2012; Rayasam, 2012; Rubenstein, 2013; Skrzypinski, 2013). Research results by Buijsrogge et al. (2016) show that interviewer (over)confidence in biased judgments is driven by the initial effects of, and reactions to, the stigmatized applicant. But there is no such stigmatized effect when the partially blind interview technique is used (i.e., when the interviewers and the applicants do not see each other during the rapport building, but this visibility is present during the interview stage). Their findings show that in traditional interviews, the stigma, formed during the rapport-building stage, influences the interviewers' decision-making process, and hence, leading to biased applicant ratings. Using a partially blind interview technique, for example, when applicants for an orchestra play behind a curtain, the biased initial impression of otherwise stigmatized applicants may be prevented. This leads to less stigmatized impressions of applicants in the interview stage, ultimately resulting in less biased interview ratings for stigmatized applicants (Potočnik, 2021, p. 171).

For example, in many cultures, typical gender stereotypes hold that women are nurturing. This association is stored unconsciously and will be called up automatically in a selection situation, for example, when women apply for leadership positions. Thus, cultural knowledge is passed on within a society, including learning about stereotypes for specific groups. For this reason, any individual within a society may be able to describe the content of the stereotype. Simply knowing the content of certain stereotypes immediately activates assumptions about a human being, upon first contact (Reskin, 2005, p. 34).

Besides implicit stereotypes and prejudices, there are explicit ones. These stereotypes are conscious and, often, a result of one`s experiences; they result from intentional and controllable thinking and can, thus, be consciously applied.

Stereotypes and related automatic categorizations (pigeonhole thinking) may facilitate decision-making, but they also can lead to biases, generalizations, devaluations, offenses, discrimination, and injustice, and thus, poor selection decisions.

As a result, organizations may operate with sub-optimal human resource utilization and neglect the potential of labor markets.

In the following, different biases are presented. It has become apparent that these biases cannot always be clearly distinguished from one another and interact in integrative fashion, in some cases.

#### 3.5.2.10 Initial impression and primacy effect

It is very common for people to form opinions about the characteristics of others from single samples, for example, the appearance and clothing. Many managers are convinced to make a correct judgment of a person within the first 30 s or first five minutes; they see quickly in an interview what kind of personality the applicant has when he walks in, how he behaves, shakes hands, dresses, and so on. Thus, "first impressions matter" (Kinnunen & Parviainen, 2016, p. 5).

Besides the initial impression, the primacy effect as a cognitive bias plays a decisive role in judging people. Primacy effect in selection processes refers to the tendency to remember information presented at the beginning of a selection process, for example, in an interview, better, and weighing on this information more heavily.

A Dutch selection manager interviewed in our research says:

> If I meet somebody for a job interview, I will never decide to hire somebody in the first five minutes, but if things go really wrong in five minutes, you can be already disqualified in my head. Never a final yes in the first five minutes, but it does happen that already after five minutes, I know, with this man or this woman, it's never going to work. I have in the past, [. . .] also told people already after 15 min in an interview: "Sorry, we're just wasting our time here, [. . .], but there's just not going to be a connection between us" (Bublitz, 2021, p. 76).

Since humans try to conserve their energy, they are more likely to pay more attention to information that comes first and less likely to attend to later data. In fact, when people read a series of statements about someone, the amount of time they spend reading the items declines with each new piece of information (Belmore & Hubbard, 1987). Research shows that hiring managers are distracted and more likely to show the primacy effect when tired than wide awake (Webster et al., 1996). People regularly develop an initial expectation about a person, based on their first impression. Once that expectation is formed, they tend to process information in ways that confirm that expectation (see confirmation bias). Once selection managers have created a positive impression, new negative information doesn't seem as bad as it might have been, had they got them first (Asch, 1946; Belmore & Hubbard, 1987; Gilbert et al., 1990; Ambady & Rosenthal, 1993; Ambady & Skoronski, 2008; Bar et al., 2006).

Olivola & Todorov (2010) examined whether appearance-based inferences are valid forms of social judgment. They found that judges are generally less accurate at predicting characteristics than if they ignore appearance cues; instead, they regularly rely on their knowledge of characteristic base-rate frequencies and an underlying distribution of characteristics. In most real-world contexts, where various social signals are available, reliance on appearances may actually make people worse at predicting the characteristics of others. Their research also shows remarkable overconfidence in inferring characteristics from appearances. The findings suggest that appearances are overweighed in judgments and can have detrimental

effects on accuracy. Thus, they introduce their publication with the warning "not to judge a book by its cover" and quoted Jean de La Fontaine: "Beware, as long as you live, of judging people by appearances" (Olivola & Todorov, 2010, pp. 315, 322–323). Therefore, hiring managers should always give applicants a chance to make a second impression.

#### 3.5.2.11 Recency effect

While the tendency to recall earlier information is called the primacy effect, the tendency to recall the later information is called the recency effect. Information received most recently is perceived as more important and is more likely to be recalled. Therefore, special attention is paid to the most recently acquired information in a selection interview. Along with the initial impression, the information recorded just before the end of a selection situation (interview, exercise in the assessment center) is more likely to be remembered and valued more highly. The recency effect is a result of short-term memory. This memory holds a relatively small amount of information in mind for a brief period and can be retrieved quickly (Jones & Goethals, 1972).

What humans remember is a construction of their mind and has much to do with emotions, less with what is objectively essential. One remembers better what goes to one's heart, what makes one angry and happy, or what is of personal interest. From an evolutionary perspective, people remember what moves them, because emotionally charged events often have survival value. Thus, emotions influence what and how something is remembered.

If the observations in an interview or assessment center are only recorded subsequently, or if information needs to be supplemented later by remembering the situation, errors in the record can occur when only the later information can be recalled.

#### 3.5.2.12 Halo effect

Halo effect means that a positive or negative impression of a person in one area leads to a positive or negative opinion, feeling, or judgment of this person in other areas. One or a few perceived characteristics of the candidate "outshine" all the others. The halo effect can occur when selection managers first perceive external features of applicants (e.g., appearance, clothing, glasses, jewelry, smell, handshake, and facial expressions) and assign specific attributes to that applicant. This can be a positive or negative feature that distorts the overall picture of the candidate, in a given direction (Kanning, 2015, pp. 139–140).

Example: A particular attribute, for example, an applicant holds a degree from a renowned university such as Harvard or Stanford, or looks very attractive or friendly, influences the overall impression of that candidate without any rational-analytical evidence (Kanning, 2015, p. 138). People considered attractive or likable

tend to be rated higher on other positive traits such as qualification, competence, or intelligence. The halo effect can also affect internal selection processes in performance appraisals and reviews. Supervisors may rate subordinates based on the perception of a single characteristic rather than the whole of their performance and contribution. For example, an employee's enthusiasm or positive attitude may overshadow a lack of knowledge or skills.

Empirical evidence for the halo effect was first provided by E.L. Thorndike (1920) when he noted a high cross-relation in military officers' ratings of their soldiers' physiques, intelligence, leadership skills, and character. For example, soldiers who were taller and found to be more attractive were also rated as more intelligent and as better soldiers. Thorndike determined from this observation that people generalize based on one outstanding trait to form a favorable view of a person's whole personality.

The halo effect leads to selective perception and affects how hiring managers interpret an applicant's information. The initial impression and the halo effect can influence all other perceptions. Positive or negative expectations are confirmed through selective, hypothesis-filtered perception and information evaluation (Höft & Kersting, 2018, p. 56; Kanning, 2015, p. 141).

#### 3.5.2.13 Attractiveness bias or lookism

A widespread form of the halo effect is the so-called attractiveness bias. The first thing that catches the eye when looking through application documents or profiles on social media is often the photo. As a result, many selection managers attach great importance to a photo, according to the motto: "If I want to get a picture of an applicant, I need a picture."

In the literature, one also finds the term lookism, which stands for positive or negative discrimination, based on appearance (Hammer, 2017, Vedder, 2019, p. 104).

People approach attractively perceived people more benevolently than unattractive people and meet them in a more friendly manner and warm-heartedly. The person approached in a friendly manner also tends to respond in a friendly manner, resulting in a self-fulfilling prophecy that attractive people will be received more favorably, overall.

From the subjectively evaluated attractiveness of the applicant, other characteristics of the applicant are automatically and unconsciously inferred (Kanning, 2015, pp. 139–141). People tend to attribute positive qualities to attractive people and negative attributes to less attractive people. Therefore, job applicants who appear more attractive are more likely to be hired than less attractive candidates (Messner et al., 2011, p. 700; Dipboye et al., 1977).

Ruffle and Shtudiner (2015) found that applications with photos of attractive men receive significantly more positive feedback, even twice as much as average-looking men. Conversely, women receive more positive feedback when they apply

without a picture. In particular, applications with photos of attractive women are followed by invitations to an interview significantly less frequently. In addition, studies have identified resentment of female recruiters and prejudices against specific visual characteristics (e.g., blond hair), or fear of sending negative signals by hiring an attractive applicant (Ruffle & Shtudiner, 2015, pp. 1763–1765).

In addition, attractive persons are rated lower in assessments by persons of the same sex than the opposite sex. Here, self-esteem acts as a moderator in decision-making processes. Persons with high self-esteem evaluate attractive same-sex persons significantly more positively than persons with low self-esteem (Agthe et al., 2011, pp. 1043–1044.). While both sexes prefer attractive individuals of the opposite sex in their assessment, women prefer less attractive female applicants in personnel selection. These effects could be found among professional recruiters as well as among students (Luxen & Van De Vijver, 2006, p. 241).

Another study by Desrumaux et al. (2009) shows that in typically male jobs (engineer), when a very high level of professional competence is needed and offered by an applicant, attractiveness had no influence on the assessment, and applicants were assessed equally, regardless of appearance. However, applicants with only average competence were judged more favorably if assessed as more attractive than the unattractive applicants. A different picture emerged for the classic female jobs; here, female applicants with a high level of competence and female applicants with an average level of competence were judged better if they had an attractive appearance (Desrumaux et al., 2009, pp. 33–34).

The entire judgment of candidates can be distorted due to the idea of a candidate created by the application photo. Thus, there are repeated calls to omit photos from applications and selection processes.

To evaluate who and what appears attractive in an interview, candidates and selection managers read their counterparts' faces and body language, equally. The visual impressions made by the facial expressions, gestures, and so on, play a decisive role in assessing attractiveness. For example, research by Imada & Hakel (1977, pp. 296–297) shows that candidates are judged more favorably the more they smile, maintain eye contact, and suggest attention with their body posture.

Further studies confirm systematic judgment bias in personnel selection, such as overestimating physically attractive persons' intelligence and social competence, when reviewing application documents (Schuler & Berger, 1977, p. 67; Watkins & Johnston, 2000, p. 82; Ekman & Friesen, 1974).

Thus, the old clichés like "clothes make the man" or "dress for success" are confirmed by research. Oh et al. (2020) show that economic status cues from clothes affect perceived competence from faces. The researchers ran nine studies in which participants rated the perceived competence of people wearing different clothing. The clothes of applicants bias interviewers. Those wearing clothes seen as "richer" were rated as more competent than people wearing similar clothes that appeared "poorer," although they were not necessarily perceived as such, when explicitly

described. When seen with "richer" clothes, the same person was judged to be significantly more competent than with "poorer" clothes. The effect persisted even when perceivers were exposed to the stimuli briefly (129 ms), warned that clothing cues are non-informative, and instructed to ignore the clothes (in one study, with considerable incentives). These findings demonstrate the more or less uncontrollable effect of economic status cues on person perception and show another hurdle to getting a job by less wealthy individuals.

A study by Marlow et al. (1996, pp. 11–17) shows that hiring managers with more experience in selection decisions select more rigorously and pay less attention to applicants' attractiveness than decision-makers with less experience.

Hiring managers should consider that attractiveness bias or lookism can also include aspects of, for example, racism, sexism, and agism.

That hiring managers should be cautious about inferring applicants' personality traits from non-verbal perceptions is also shown by Breil & Back (2019; see also Breil et al., 2020). But they also state that only a few specific non-verbal cues lead to personality impressions, and only a few non-verbal cues are good indicators for the accuracy of personality judgments. And good judges, for example, "socially highly curious judges generally used more available cues and were thus more likely to detect valid cues for visible traits (in this case extraversion and openness)" (Breil et al., 2020, p. 29; see also Hall et al., 2017. For possible universals in facial expressions see Ekman, 1994; critically see Gendron et al., 2014).

However, these research results should be critically questioned regarding their applicability to current times, as socio-economic factors are subject to constant change.

#### 3.5.2.14 Similarity effects, in-group favoritism, and homophily

According to Weuster (2004, p. 265), Condon & Crano (1988, p. 792), or Anderson & Shackleton (1990, pp. 64–65), similarity is one of the most critical determinants of interpersonal attraction that leads to having a liking for someone, and a certain amount of sympathy for somebody. According to the similarity-attraction-paradigm, people like and are attracted to others similar to themselves and share similar attitudes, interests, and/or other characteristics, for example, personality traits, similar social, ethnic, and cultural backgrounds, education, socioeconomic status, hobbies, values, beliefs, attitudes, religion (Berscheid & Walster, 1969; Byrne, 1971).

Similarity can be recognized in an interview or when looking at application documents. For example, research shows that personalized cover letters, a friendly and positively perceived appearance in the application photo, or friendly relationship building by applicants in the interview significantly reduce the social distance between manager and applicant and lead to more positive judgments (Trope & Liberman, 2010; Trope et al., 2007).

Humans develop positive emotions and like people with whom they find similarities; they know from their experience that these positive emotions could positively affect possible cooperation. Therefore, people perceived as similar to themselves are evaluated more positively (Anderson & Shackleton (1990, pp. 64–65). Thus, people's intuitions and emotions may tell them to surround themselves with similar people. In addition, people prefer what they know and are familiar with.

Thus, people with whom we have something in common are assessed more positively than others.

In Germany, there is a saying: "Smith is looking for little Smith"; or "John is looking for Johnny" (See Figure 6). This means that people are intuitively drawn to people they perceive to be like them (Sadler-Smith, 2019, p. 16).

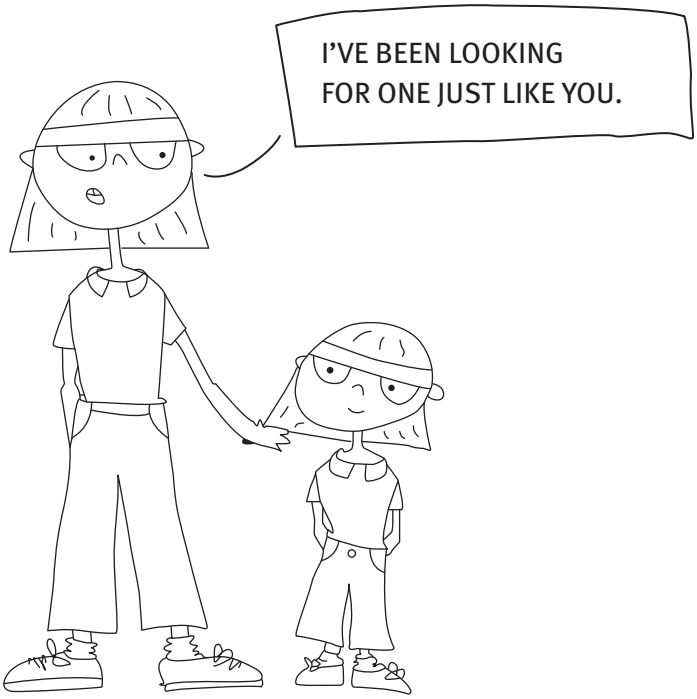



**Figure 6:** Smith is looking for little Smith (illustration by Ninon Kolacz).

An error in assessment may occur because candidates who are similar to the selection manager tend to be rated higher. These distortions of perception or errors of judgment can arise from sympathy or antipathy, which are usually reactions to qualities people like or dislike in themselves. Applicants are likewise attracted to companies where people are similar to them (Orpen, 1984, p. 116; Kolominski, 2009, pp. 72–73).

#### 3.5.2.15 In-group favoritism

In-group favoritism is a subtype of the similarity effect. It is also known as in-group-out-group bias, in-group bias, or intergroup bias. In-group-favoritism is the tendency to respond more positively to people from in-groups (a social group to which one psychologically identifies as a member) than to members of out-groups. People also make trait attributions in ways that benefit their in-groups, just as they make trait attributions that benefit themselves.

For example, in processes of employee referrals, there is a risk of in-group favoritism, similarity attraction, and homophily, the tendency to bond with similar others, as the well-known proverb says: "Birds of a feather flock together." One of the principles that family businesses are persistently said to adhere to is: "Blood is thicker than water"; as far as filling management positions is concerned, this means: The family or clan comes first, always.

This kind of favoritism, called nepotism, means that members of a family or clan use their power in various fields, including business, politics, entertainment, sports, religion, and other activities, to get good jobs or other advantages for the family/clan members.

Research results show that people, and thus, also selection managers, who are deeply embedded in collectivist or family/clan structures are subject to very great social pressure to select personnel not according to job requirements but according to supposed expectations of the collective (Hotho et al., 2020, p. 676). In addition, hiring managers can also be subject to social pressure, such as if their superiors require them to hire children of friends or executives, and customers or business partners.

Since our ancestors settled and lived in small social groups and were frequently in competition and conflict with other groups, it was evolutionarily functional for them to view members of other groups as different and potentially dangerous (Brewer & Caporael, 2006; Navarrete et al., 2004). Differentiating between "us" and "them" probably helped keep humans safe and free from disease, and as a result, the human brain became very efficient in making these distinctions (Van Vugt & Schaller, 2008; Zárate et al., 2008). The problem is that these deep-seated reflexes may lead hiring managers to prefer people like them and, in some cases, even decide unfairly and reject people from out-groups.

Research shows that people who can be assigned to the social or ethnic group of the decision-maker are given preferential employment (Åslund et al., 2014, p. 406). Suppose the decision-makers fear that the performance of a group member could shed a negative light on the whole group (e.g., damages the evaluation of the in-group). In that case, they could consider the risk and decide to the detriment of a candidate of the own in-group, for example, to avoid costly errors. "By considering the cost of errors, we can predict selective in-group favoritism and denigration as a function of the self-esteem implications of the judgments. Selective in-group favoritism emerges when it has social identity advantages but reverses when such

favoritism would have a negative impact on social identity" (Lewis & Sherman, 2003, p. 273).

Employee referrals may also be subject to in-group favoritism, as employees often address people from their social environment. Since referred candidates are more likely to be hired and less likely to leave the company, and because the recruiting costs are regularly lower (Burks et al., 2015, pp. 807–816), hiring managers should be aware of the possible risk of in-group favoritism.

In-group favoritism can also mean filling management positions abroad with parent company employees (ethnocentric approach).

In-group favoritism can also be a consequence of cultural imprint. We know that human decision-making and behavior are not really objective; people construct the world in which they live and act according to different cultural preconditions and related, partly normative reference frameworks and associated patterns of thought and behavior. Moreover, intercultural research shows that national or group culture strongly influences human perceptions and what is (or is not) particularly perceived and observed in specific situations. For example, it can be seen that people from low-context cultures recognize and emphasize other things than people from high-context cultures, when perceiving the same situation (Masuda & Nisbett, 2001; for more details, see Section 7.2.4.2.1).

Since maintaining harmony among group members and voluntary cooperation toward group goals are essential characteristics of collectivist culture, in-group favoritism is a social expectation. It is confirmed in practice that in collectivist cultures, in-group favoritism (for example, preference for members of the family, extended family, or clan) is relatively widespread in the selection of personnel (Yamagishi et al., 2002; for the relationship between *Guanxi* and HR/People Management in China see Jones & Law, 2009). Moreover, due to the rapid professionalization of HR/People management, scientific research, global standards, legal and ethical requirements, and so on, hiring managers in these societies are, nowadays, commonly expected to base recruitment decisions exclusively on candidates' qualifications and merit (Stahl et al., 2012). Thus, in-group favoritism, as a kind of nepotism in recruitment and selection, remains a persistent challenge in these cultures, especially for European or American organizations (Horak, 2017; Hotho et al., 2020).

#### 3.5.2.16 Confirmation bias

When filtering and processing information and solving problems, people tend to focus on information that confirms previous perceptions, attitudes, beliefs, and convictions and ignore information that does not. Humans are wired to see what they expect to see, which means they have selective attention. Thus, confirmation bias means that people tend to seek out and pay attention to information that confirms their beliefs and hypotheses, ignoring data that do not. In addition, they tend to surround themselves with people or read information, books, newspapers, internet

sources, and so on, that confirm their opinions. This is how people consolidate their worldview and, of course, their prejudices.

From everyday life, everyone probably knows that sports team fans are likely to perceive unfair behavior more often in the opposing team than in their own. The principle is the same, when it comes to personnel selection. HR managers use their previous knowledge to interpret events and behavior. Perceptions are unconsciously influenced, so that information is interpreted to confirm previously formulated opinions. The cognitive process of receiving, storing, and intuitively processing information is also affected by applying mental abbreviations (heuristics), leading to many distortions of perception (Lee, 2005, p. 482).

As a result, they may fail to notice objects or events around them, a behavior known as inattention blindness. This pattern of seeing what we expect to see and discounting evidence to the contrary is known as confirmation bias. A result of confirmation bias can be that we may not change our ideas about an issue, just because we get new facts (Robertson, 2019, p. 7; Myers, 2008, p. 434).

Inattention blindness arises because humans want coherent overall impressions. As a result, many people find it challenging to accept ambiguities or even affirm them and see them as something positive (tolerance of ambiguity).

Since mismatched cognitions and, thus, inconsistencies between cognitions create dissonance, humans attempt to reduce this emotional state of tension. Therefore, information is sought that reduces the cognitive dissonance or prevents it from arising, in the first place. At the same time, an attempt is made not to perceive information that leads to cognitive dissonance. In this way, information or cognitions that create dissonance are eliminated.

Humans do not want to recognize the limits of their own perceptions and are confident in their positions. Thus, they need and want information that is as consistent as possible. In addition, they want to avoid ambiguities and contradictions and reduce cognitive dissonance.

Confirmation biases are, thus, an expression of reducing dissonance or preventing it from arising, in the first place.

People tend to make things easy for themselves and their brains. They often do not want to differentiate but to generalize. These generalizations lead to simplifications and distortions. When the perceived information matches their beliefs, their brain is more likely to evaluate it as correct and valid.

Macan & Dipboye (1990) show that the interviewers` pre-interview impressions positively relate to post-interview impressions. Selection managers form hypotheses about the suitability of an applicant. Whether it is specific references in the application documents like studying at particular universities or the handshake, eye contact, or walk of applicants, the risk of self-deception exists. The hypothesis is then tested in the interview.

Research shows that “expectation shapes reality” (Rock & Schwartz, 2006). The social construction of reality can be seen in hiring managers’ behavior and how

they perceive and evaluate candidates' observed behaviors. When applicants seem particularly likable, hiring managers search for information that supports the applicant's suitability. Thus, selection managers can overlook candidates' weaknesses by minimizing their relevance to the job, or by devaluation or suppression of conflicting information.

The confirmation bias can also be associated with Antonovsky's concept of "sense of coherence" (Antonovsky, 1979, 1993). According to this, people have an adaptive dispositional orientation to cope with adverse experiences and strive to use understandable, meaningful, and manageable information individually, in a specific situation. The coherence effect describes the phenomenon that information is not objectively incorporated into decisions. Instead, data is unconsciously reassessed when deciding to match a preferred interpretation. As a result, the selective perception of attributes or characteristics of an applicant and the evaluation of these attributes shift to cohere with the information that substantiates the assumptions made in advance (Höft & Kersting, 2018, p. 56).

Suppose we understand the brain as a neuronal network of interconnected information units. In that case, human perception never only activates and recalls isolated information in the brain but also activates associated information units. For example, if we hear the word fire brigade, the associated color red is automatically activated. This activation is bidirectional, that is, there is mutual and parallel activation of information processing in the brain. This way, meaning is formed that best explains and confirms the available information. For example, this mechanism may result in information about an applicant being automatically and unconsciously sorted to support an interpretation as coherently as possible for selection decisions.

In contrast, any existing counterevidence or contradictory information is hidden or devalued. Processing extraneous, for example, information that is not job-relevant (e.g., gender, attractiveness, ethnic group, and social background) requires cognitive resources that compete with resources needed for a requirement-oriented personnel selection. One result of these unconscious processes is, often, at first, a "feeling" that tends in a particular direction, without knowing exactly how this feeling was created. This phenomenon is also called intuition. Furthermore, these processes deliver a feeling regarding the degree of coherence of the current interpretation. This allows interpretations to be accepted or rejected (Glöckner & Towfigh, 2015, p. 272).

#### 3.5.2.17 Self-serving bias

Self-serving bias means that perceptual processes and judgments can be unconsciously biased, due to the hiring manager's self-interest. For example, Berne (1949) states that the assumption of satisfying needs influences human behavior; people take an interest in others, when they serve them to achieve vital needs and interests.

Hiring managers – like all humans – need to maintain strong self-esteem and evaluate themselves positively: I'm worthy, I believe I'm a competent selection manager, and so on.

This can also be a status quo bias, considering the current selection procedures as optimal and anything different as a loss. This leads to a continuation of status quo in selection procedures (Terpstra & Rozzell (1997, p. 483).

Self-serving bias can also mean attributing negative results and failures to external factors and internalizing and attributing positive outcomes and success to one's efforts and competencies. For example, when presented with identical information, individuals tend to view information supporting their position and serving their individual interests as more convincing than those supporting the other side (Bazerman et al., 1997, p. 91; Campbell & Sedikides, 1999; Myers, 2015). Thus, hiring managers might tend to attribute every successful selection decision to their individual competencies and knowledge of human nature and less to the methods and instruments used. Or being hired for a job is attributed by candidates to their competencies and characteristics, whereas failure to obtain a job is attributed to external factors.

Hiring managers convinced of their particular personnel diagnostic competencies have little interest in questioning themselves, and negative aspects or outcomes of their selection decision are ignored. If, for example, a hiring manager gets feedback that a new employee has performed very well two weeks after a vacancy has been filled, this strengthens the belief in the manager's professionalism. However, should the new employee's supervisor express skepticism, the hiring manager may explain that it takes time to integrate the new hire into the company and for him/her toperform (Kanning, 2015, p. 144).

Or hiring managers might perceive a candidate very positively, because they are convinced this candidate can improve their own positive reputation and standing within the company, or promote a candidate as a favor to an important customer or a senior executive. On the other hand, other hiring managers may perceive this applicant as a competitor, who could challenge them for their current position; this candidate would, then, be perceived critically.

Thus, hiring managers should reflect to which extent other people (e.g., specific candidates) can support or threaten the hiring managers in reaching their individual needs and goals, including those of getting benefits, influence, and power (Schmid & Gèrad, 2008, pp. 35–38).

#### 3.5.2.18 Correspondence bias or fundamental attribution error

Humans seek reasons in their judgment processes (Bierhoff & Frey, 2006, p. 332), but attributing false causes can result in decision errors. Correspondence bias or attribution effect describes the phenomenon that the influence of the current situation or circumstances is underestimated in analyzing and assessing behavior. In

contrast, the impact of a personal predisposition (personality or traits) is overestimated (Myers, 2008, p. 637).

Thus, correspondence bias or fundamental attribution error is the human tendency to believe that applicants' behavior necessarily reflects who they are and, thus, overattributes behavior to an applicant's traits, values, or motives. As a result, hiring managers may see applicants behaving in a certain way and assume that this behavior expresses their personality. As a result, they neglect the influence of the situation, even when there is a perfectly logical external factor motivating the applicant's behavior. Even when hiring managers are aware of the particular circumstances, they often overlook them and instead infer that this applicant always behaves this way (Miyamoto & Kitayama, 2002, p. 1239).

An example is that a formal error in a CV can be interpreted as low motivation to get the job. Or gaps in the CV will be anchored to the lack of conscientiousness and, thus, in the applicant's personality; or being late to the interview is seen as an expression of the candidate's personality and not a consequence of an hour-long traffic jam on the highway (Kanning, 2015, p. 141).

Similarly, selection managers can make self-esteem-serving attributions (Greenberg et al., 1982). For example, to protect against threats to their self-esteem, they may attribute their successes (e.g., selecting successful candidates) to their own competencies, and failures (hiring an employee who later does not perform) to circumstances or poor leadership of the supervisor of the new employee.

#### 3.5.2.19 Cultural bias

Cultural bias is the phenomenon of interpreting and judging behaviors of others in terms of one's own cultural standards and assumptions; for example, specific cultural values, beliefs, mindsets, and behaviors. Cultural biases occur when people of a specific culture make – without examining the evidence – assumptions about people of other cultures concerning their personalities, attitudes, values, behaviors, conventions, and so on (see prejudices and stereotypes). For example, many cultural biases exist concerning skin color, religious beliefs or rules, and ethnic concepts of right and wrong behaviors. Example: Specific greetings, hand gestures, or prolonged eye contact can be seen in some cultures as a sign of disrespect.

Cultural bias can lead selection managers to form opinions and judge applicants, before any actual experience with them. Since these cultural biases can significantly affect selection processes involving global leaders or expatriates, every hiring manager should reflect upon them, differently.

#### 3.5.2.20 Ethnic biases

Ethnic biases, as a particular cultural bias, consist of attitudes and beliefs about people of specific social groups and can be attributed to stereotypes and prejudices.

The basis of ethnicity can be appearances such as skin tone, cultural origins, behavior, language, ancestry or religion, or connection to a specific area.

Ethnic bias leads to prejudices, anti-foreign sentiments, and discrimination against entire groups, such as Latinos, Afro-Americans, Indians, Scots, Turks, Arabs, Muslims, and Jews. (Brief et al., 2000; Bertrand & Mullainathan, 2004). People with these prejudices prefer not to interact with members of "disliked" groups and try not to hire them. In addition, these ethnic biases can lead to people being excluded from the application process because of their skin color, a particular headgear, or even a foreign-sounding name.

A very extreme form of ethnic bias is racism; racism is the belief in human races and, in particular, in the superiority of one race over another. The term race and its use can be seen critically; current research largely agrees that human races are a social construction without a biological basis. Therefore, it is argued not to use the term "race" when speaking of human beings, but instead of ethnicity. A person who is biased against people of other ethnic groups is prejudiced. Bias or prejudices lead to discriminatory treatment, and no one should be discriminated against, based on ethnic background.

One way to reduce discrimination based on cultural or ethnic biases or physical appearance would be to hide names or photographs from resumes (making them anonymous), whether through government legislation or by simply changing the current convention (Ruffle & Shtudiner, 2015, p. 1775).

#### 3.5.2.21 Hindsight bias

Hindsight bias (or knew-it-all effect) is a retrospective error of judgment and memory distortion in which a person believes, in retrospect, that s/he knew the outcome of a decision that only later proved to be true (Fischhoff, 1975). Thus, hindsight bias causes one to view the success or failure of a hired candidate as more predictable than it`s really possible. If, for example, after hiring a candidate, a hiring manager gets the feedback that the candidate did not perform as expected, s/he may then "remember" not being entirely sure about this particular selection decision from the outset, or to have hired the candidate because there was no one better, or to give the candidate a chance. The hiring manager then may say: "I always thought that!" or "I knew from the beginning that it would go wrong" (Kanning, 2015, p. 144; Höft & Kersting, 2018, p. 56).

Hindsight bias can thus lead to the assumption that hiring managers acted absolutely correctly and did everything right, where they were perhaps simply lucky. Of course, the selection managers are subject to this possible bias, as are superiors or line managers.

The hindsight bias or the illusion of having known (in advance) and done everything right can lead to the illusion that one will continue to be successful in the future, based on one's previous selection behaviors and procedures. Managers

experience this illusion as reassuring, because they feel secure having proceeded absolutely correctly.

If hiring managers look back at their past decisions and conclude that their consequences were, indeed, known to them at the time (when they weren't), then they overestimate their ability to foresee the future implications of their selection decisions (Fischhoff & Beyth, 1975; Roese & Vos, 2013; Danz et al., 2015; Hermann & Mayer, 2020, p. 33).

Thus, hindsight bias supports managers to become less accountable for their decisions, less critical of themselves, and overconfident in their decision-making ability.

Two heuristics identified as "mental shortcuts" by Tversky and Kahneman are of immediate importance, in developing the hindsight bias. These are the availability heuristic (the tendency to use information that comes to mind quickly and easily, when making decisions about the future) and the representativeness heuristic (making judgments by comparing results to concepts, for example, selection procedures, people already have in their mind). These heuristics activate hindsight information and, thus, hindsight bias, for example, the knew-it-all-along-effect as a specific hindsight bias and, thus, the risk of overestimating one`s ability to predict the consequences of a past decision.

Selection managers should consider that "wrong" past judgments and making mistakes are not useless, but learning opportunities. It is better to admit mistakes and reflect on them critically than to pretend they did not occur. Of course, the past cannot be changed, but this does not mean that the analysis of past decisions is not helpful for future decisions.

#### 3.5.2.22 Gender bias

The gender of job applicants can also be an object of bias in hiring decisions, generally favoring male over female applicants, for example, for higher leadership positions or some gender-stereotyped jobs (e.g., nursing and geriatric care). Indeed, numerous studies indicate that males are commonly preferred over females in many hiring contexts, regardless of their qualifications (Messner et al., 2011, p. 700). Bowen et al. (2000) found significant pro-male biases in performance appraisals, when only men served as raters; but they also found that feminine measures produced pro-female bias.

Female pilots or skilled female workers such as car mechanics may face distrust in their service provision; women also remain underrepresented in high leadership positions. Studies show that

> (s)o long as . . . recruiters were unaware of applicant gender, women were accurately identified as qualified talent and selected for a job interview. Once recruiters knew applicants' gender, women faced significantly worsened chances of being selected than in a gender-blind setting. Women's personal and functional competencies are regularly overlooked once they

> are identified as women. In these cases, highly qualified women are disadvantaged to less-qualified males. Women are held back by stereotypes and socialization and often do not assert themselves enough in the workplace. Women are discriminated against, if not explicitly at least implicitly, as their talent and suitability are overlooked due to gender bias (Keinert-Kisin, 2016, pp. V–VI).

Correspondence bias or the fundamental attribution error may also contribute to gender bias, as more men work in higher positions than women, and successful managers are associated with characteristics, attitudes, and competencies that are more commonly ascribed to men than to women (Eagly & Karau, 2002; Biswas et al., 2109). Both factors may contribute to the stereotype that males are better qualified for managerial positions, often referred to as the "think-manager-think-male" bias.

Conversely, a preference for women is found in low-status domains, where more women than men are employed (Messner et al., 2011, p. 700). In recent years, it has become apparent that more and more women are being selected for management positions, especially in Western countries. Yet, gender bias still significantly impacts selection decisions, especially for management positions.

#### 3.5.2.23 Sexual orientation bias

This usually refers to a predisposition towards heterosexual people and is based on stereotypes about people, based on their sexual orientation and behaviors. These stereotypes and prejudices lead to discrimination against LGBTQ + people (LGBTQ+ is an acronym for lesbian, gay, bisexual, transgender, queer, or questioning; and the + means "or other gender identities"), especially in the labor market and personnel selection processes.

#### 3.5.2.24 Age bias/ageism

Age bias (also called ageism) is stereotyping and discrimination against individuals or groups based on their age, especially older people. These prejudices are often based on the deficit model of aging, for example, that more senior employees are resistant to change and learning new things, are not creative, have reduced physical capacity (Bal et al., 2011; Karpinska et al., 2013).

The consequence is that older applicants have fewer chances in the labor market, are less likely to be invited for interviews, and have fewer chances of getting a job.

#### 3.5.2.25 Disabilities bias/ableism

Disabilities bias (also called ableism) is based on stereotypes and prejudices against people, especially against physical or mental disabilities. For example, hiring managers with this bias think that persons with disabilities are generally less able to perform, are more often ill, want to be cured, and are subject to special protective

regulations. The result is that these people have fewer chances in the labor market, are less likely to be invited for interviews, and have fewer chances of getting a job.

#### 3.5.2.26 (Over)weight bias

People with this bias often see overweight persons as indolent, lazy rather than dynamic and efficient, undisciplined, overly sensitive, using humor to be liked, and so on (Finkelstein et al., 2007). "Well, I admit, if someone is really, really fat, he has no chance" (Bastian, 2018, p. 165). The result is that overweight, especially obese people, have fewer chances of getting a job.

#### 3.5.2.27 Rating scale bias

Even if specific behavior anchors and scaled requirement criteria are implemented, many hiring managers have a subjective assessment system and measure candidates, based on their individual aspirations and requirements. This can lead to rating scale errors. Rating scale biases can be influenced by the similarity or difference of the selection manager to the candidate, experience with other applicants, or the tendency of an assessor towards average, mildness, or rigor (Kanning, 2015, p. 140). Via training, supervision, or reflection with other hiring managers, the personal reference or rating scale system could be adapted to a predefined evaluation standard.

An example of these distortions of perception is the so-called mild-hardness effect. In a mild effect, erroneous assessments are made, based on leniency with the corresponding applicants. This effect can be justified, for example, by bad personal experiences with negatively evaluated persons or by the overestimation of emotional components in professional life. The opposite phenomenon is the hardness or severity effect (Fallgatter, 2013, p. 178).

The propensity for giving average ratings is called the tendency towards the middle. If too little information is available for an accurate evaluation, or if the data is contradictory and cannot be precisely evaluated, or if assessors are conflict-averse, they often choose a medium scoring (Fallgatter, 2013, p. 178). In personnel selection, this can lead to a situation in which competencies that cannot be assessed unambiguously are unconsciously and automatically assessed as mediocre, without further search for indications of competencies.

#### 3.5.2.28 Psychological projection

Psychological projection can occur in selection processes. It is a defense mechanism by which hiring managers defend themselves unconsciously against impulses (both positive and negative) or traits, by denying their existence in themselves and attributing them to others. The projection includes the transfer of an inner-psychic content, for example, being aggressive or lazy, to others because these characteristics conflict with one's self-image, values, or social norms and, thus, not acceptable

to have it in oneself. Then, these feelings, desires, impulses, or characteristics are projected onto the applicant, rather than admitting, reflecting, or coping with that unwanted or unacceptable feeling, desire, trait, and so on, in oneself. The concept was introduced by the Austrian psychoanalyst, Sigmund Freud (Baumeister et al., 2002).

The psychological projection consists of avoiding dealing with impulses in oneself, for example, negative emotions towards an applicant, and projecting these negative emotions onto the applicant. This process then convinces a hiring manager of a candidate's negative or aggressive emotions. Thus, the selection manager, for example, blames the applicant for an unfriendly attitude, resulting in a negative evaluation.

#### 3.5.2.29 Overconfidence bias

The quality of a decision depends on the self-confidence of the decision-makers and to what extent they trust their judgment.

However, many people tend to overestimate their competence and the accuracy of their judgments. Thus, many managers and human resource professionals overestimate their abilities and the quality of selection procedures used in practice.

They, often, cannot imagine having made suboptimal or poor decisions, and the memory is sometimes distorted, in retrospect. If, however, it is recognized that a wrong decision has been made, then, it may be argued that the candidate has misrepresented himself in the selection procedure, rather than an error having been made in the selection (see self-serving attribution). The decision is perceived as uncertain from the beginning (Kanning, 2015, pp. 143–144).

Daniel Kahneman and Amos Tversky (1973, 1996) summarize this as the overconfidence bias. Plous (1993, pp. 217–218) has called overconfidence the most pervasive and potentially catastrophic of all the cognitive biases human beings could have. Berthet (2022) reviewed the research on the impact of cognitive biases on professionals` decisions and found that overconfidence is the most recurrent bias. Kahneman said in a 2016 interview: "What would I eliminate if I had a magic wand? Overconfidence" (Shariatmadari, 2021).

Thus, any human, especially hiring managers, should recognize the limits of their competencies (Kausel et al., 2016).

A specific kind of overestimation is the "bias blind spot," the tendency of people to see themselves as less susceptible to biases than others. Thus, hiring managers may deny or fail to see the impact of biases on their judgments (see Section 3.5.2).

Overconfidence can also follow from hindsight mistakes, leading to overestimating one's ability to make correct judgments. Retrospectively claiming that hiring managers had predicted a "wrong" outcome makes them immune to criticism. They

present their decisions as better than they actually were and avoid critical reflection and evaluation.

The overconfidence phenomenon occurs, above all, with less experienced persons, where a less good decision is judged better than it actually is. However, with more experience, decisions improve and are more accurately assessed (Pfister et al., 2017, pp. 157–158).

Overconfident decision-makers are problematic, because they have an illusion of understanding. In particular, they overestimate the validity of unstructured interviews and often do not know how accurate their selection decisions are. As a result, they are willing to take more risks and may terminate a selection process before finding the (actual) best candidate. Furthermore, they fail to acknowledge the role of uncertainty in personnel selection and that decisions are subject to error (Kausel et al., pp. 34–35).

#### 3.5.2.30 Technologically induced bias

A study by the universities of Magdeburg (Germany) and Sønderborg (Denmark) shows that due to the high data volume, video conferencing systems such as Zoom, Skype, or Teams thin out high frequencies of female voices, to save data volume. The study showed that signal compression codecs used in remote meetings and mobile communications adversely affect perceived speaker charisma, and substantially. The researchers conclude that in the case of female voices participating in videoconferences (and comparable then also applies to video interviews), essential emotional components were not perceived by the test listeners, compared to male participants. The female voices were perceived as less expressive, competent, and charismatic. This can lead to discrimination against women. They also found that the perceived clarity of the pronunciation determines the speaker`s charisma.

The researchers recommend that when developing codes for a digital meeting or interview tool, attention should be paid not only to pure voice quality, word intelligibility, and suppression of background noise, but also to the transmission of characteristics, such as expressiveness, emotionality, and charisma (Siegert & Niebuhr, 2021).

#### 3.5.2.31 Sample (selection) bias

This bias occurs when some population members are systematically more likely to be selected in a sample than others. Sample bias is often caused by choosing non-random data for statistical analysis. The bias exists due to a flaw in the sample selection process, where a subset of the data is systematically excluded, due to a particular attribute. An example is when using algorithms or AI in selection processes. One of the critical challenges in implementing algorithms and AI in selection processes is to provide a large amount of high-quality training data. This training data can be selected by people but also by self-learning AI systems. However, there is a risk that AI

could learn human bias and amplify it. Thus, errors such as discrimination might occur in the selection process. If, for example, men were selected predominantly for certain positions in the past, the algorithm might recognize this as a pattern and favor men, accordingly, in future selection processes. The underlying training data would then not adequately represent the actual population in the application area. The creation and preparation of a high-quality and, at the same time, non-discriminatory data set are, therefore, a central challenge for companies that want to use AI and avoid "sample (selection) bias" in the selection process. If, among other factors, this is provided, the use of AI can help reduce other biases as well.

#### 3.5.2.32 Conclusion

The formation of judgment depends on many factors. Bias and distortions of perception are influence factors that must be considered, but there are individual differences in cognitive biases. How selection managers perceive depends partly on their position in the organization. Line managers may have a different view of job requirements than their colleagues from the HR department, the job holders themselves, or other stakeholders, such as customers (Guion, 1998, p. 581). Hiring managers differ in their personality and education, and personal characteristics and experiences influence each individual's limited and selected attention. The competent handling of "cognitive complexity" or "cognitive simplicity" also affects the strength of a hiring manager's judgment, significantly. The better a manager can conceptualize complex situations, requirements, or relationships, the more accurate the judgments. A further parameter of a hiring manager`s success lies in their motivation. They should be aware of the importance of filling the vacancy in a high-quality process and should not see selection as a task that can be done on the side; thus, they should not do their job with the attitude to move on, as quickly as possible, to other tasks (Guion, 1998, pp. 581–582).

It is well known that people find it challenging to admit misconceptions and change their own views and perspectives. Therefore, it is helpful to make iterative or dynamic adjustments to one's decision-making behavior through constant feedback and continuous comparison of the expected and actual consequences of one's decisions.

By knowing about selective perception and biases, especially through feedback, and a critical reflection of their imprints (e.g., in awareness training), hiring managers learn about their assumptions, prejudices, and biases and try to reduce them. Nevertheless, there is always a risk of being unconsciously influenced by them. Thus, selection decision-makers should know what stimuli activate their prejudices and other biases. Furthermore, to overcome a bias, one needs to be mindful of it and have the time, attention, and motivation to counteract it, through rational reflection (Kulik et al., 2007, p. 529).

## 3.6 Benefits of rational-analytical selection procedures

### 3.6.1 Reduce perceptual distortions and bias

People are people and, thus, imperfect. Mistakes are bound to happen. However, errors in selection processes can be reduced. Research clearly shows that rational-analytical procedures in personnel selection can reduce perceptual distortions and biases. It is, thus, essential to acquire knowledge about rational-analytical selection procedures and their advantages and disadvantages. This includes, as described in Section 3.5, learning about (unconscious) stereotypes, prejudices, and biases and how they are likely to affect their judgments and decisions.

From a rational-analytical perspective, it is most important to base selection decisions and procedures on evident research results and not only on subjective impressions, feelings, or intuitions.

Several international selection managers interviewed in our empirical research express that, although specific standards of personnel selection are demanded in a global company, the understanding of quality varies significantly, from culture to culture.

At the same time, selection managers report their experience that even within one culture, the understanding of quality in personnel selection is very different and, thus, highly subjective. Most of the interviewed hiring managers agree that using a rational-analytical procedure and implementing science-based quality standards make it possible to reduce biases, discrimination, and law violations.

A large proportion of those we interviewed confirm that the quality of personnel selection is ultimately determined by the result (quality of hiring). However, high quality in the process is required to achieve good results; and the quality of the selection process is most likely to be ensured, when taking a rational-analytical approach.

Even though our interviewees define “analytics in personnel selection” differently, they broadly agree that rational-analytics refers to a systematic and structured personnel selection procedure that is coordinated and standardized, within the company.

The primary goal of the analytical approach should be to establish objectivity and, thus, fairness, legal certainty, and comparability of applicants in personnel selection.

Several interviewees emphasize that it is essential to switch off emotions and intuitive impressions to be able to select people objectively, to assess applicants based on evidence, consistent requirements, and without the risk of subjective unconscious bias.

The selection process, from the analysis of the application documents to the final decision, should be carried out, based on a clear job description and previously defined job requirements; and the selection process, as a whole, should be as

standardized as possible. Most interviewees agree that this should include an interview guideline, including evaluating candidates' behaviors, based on behavioral anchors. Almost all interviewed hiring managers agree that at least two selection managers should be involved in a selection process, e g., interviews, to reduce the influence of individual biases such as confirmation bias, and to reflect together upon individual perceptions, intuitions, emotions, and, thus, judgments (Deters, 2019, pp. 112–114).

Effective personnel selection aims to avoid the so-called type I and type II errors (Weuster, 2012, p. 1). In the case of a type I error, an objectively suitable applicant is considered unsuitable. An objectively unsuitable candidate is assessed as appropriate and hired with the type II error.

Research by Höft & Kersting (2017, pp. 59–61) shows that to avoid these type I and type II errors by reducing stereotypes, prejudices, bias, and discrimination and to hire the best suited and qualified applicants, a rational-analytical approach is recommended. In addition, selection training for personnel managers can reduce both types of errors (see Section 9.1).

From a holistic perspective, it is not enough to train selection managers to recognize possible distortions, biases, and so on, and reduce them, individually. It is also essential to act at the process level and, thus, at selection procedures, instruments, and tools.

The tendency to be subject to these effects should be accepted as a hypothesis to understand the consequences and counteract them. For example, one measure to reduce the primacy and recency effects is to write detailed notes, for example, during interviews or exercises at an assessment center; or only accept applications without photos.

The more complex the job to be filled, the greater the differences in individual performance (Alon & Higgins, 2005, p. 501). Since leadership tasks, especially on an intercultural level, require acting in diverse and complex environments, the importance of a high-quality hiring approach increases.

There is positive correlation between implementing scientifically based rational-analytical personnel selection processes and business success (Harter et al., 2002, p. 268; Terpstra & Rozell, 1997).

A meta-analysis comprising 61 primary studies shows that more the effort a company invests in selecting new employees, greater the business success. In addition, poor personnel selection can only be compensated to a limited extent by personnel development measures (Gmür & Schwerdt, 2005, pp. 228 and 237).

In a meta-analysis, Kuncel et al. (2013, p. 1064) clarified that

> across multiple criteria in work and academic settings, when people combined hard data with their judgments, and those of others, their predictions were always less valid, and less predictive of real outcomes, than those generated by hard data alone. This was true even when the judgments were made by experts knowledgeable about the jobs and organizations in question. In predicting job performance, for instance, hard data predictions outperformed a combination

> of data and expert judgment by 50 percent. In evaluating candidates applying to jobs (and no matter what the job was), the team of researchers found that a simple algorithm outperformed human judgment by over 25 percent. What this research suggests is that relying on the most objective data available and using algorithms to interpret it to make selection decisions beats our intuition. By far. (Gino, 2014)

"About 60% of the studies have shown significantly better accuracy for the algorithm. . . . In every case, the accuracy of experts was matched or exceeded by a simple algorithm" (Kahneman, 2011, p. 223). "The research suggests a surprising conclusion: to maximize predictive accuracy final decisions should be left to formulas. . . . Conducting an interview is likely to diminish the accuracy of a selection procedure, if the interviewers also make the final admission decisions" (Kahneman, 2011, p. 225; see also Grove et al., 2000).

In another study, Schlegel et al. (2017) state that algorithms achieve similar results in the pre-selection process, as human experts. The authors assume that the significant differences between human judgments point to the limited objectivity of the human acting like a judge.

Our empirical studies also show that implementing a specific selection procedure depends on situational factors, for example, the position to fill, the acceptance of selection procedures by the applicants, or how often a role has to be filled. The more frequently a job is to be filled, and the more pivotal the position is for the company's success, the more systematic and analytical, the selection procedure.

At the same time, the selection managers widely emphasize that analytics should not lead to unpleasant feelings among applicants and a negative candidate experience.

Ackerschott et al. (2016, p. 13) show that by applying rational-analytical selection procedures, wrong or poor decisions and resulting negative economic, social, or individual consequences for the organization can be avoided.

### 3.6.2 Advantages of systematic requirement analysis and interview guidelines

A rational-analytical selection process should start with a systematic requirement analysis. First, the requirement profile must describe the requirements relevant for completing the position to fill. The more concrete, behavior-related, and job-specific the requirement profile, the more valid the basis for personnel selection decisions. Ackerschott et al. (2016), also emphasize the behavioral reference and the concreteness of the requirement profile as an essential prerequisite for valid recruitment interviews and hiring decisions.

Using a job and requirements analysis alone leads to doubling the forecast quality (Kanning, 2015, p. 105). In this context, it was also empirically confirmed that a differentiated requirement profile leads to higher interrater reliability (e.g., $r = 0.87$ compared to $r = 0.35$ according to Langdale & Weitz, 1973, pp. 24–25; see also

Hahn & Dipboye, 1988). Furthermore, results from meta-analyses (Wiesner & Cronshaw, 1988, p. 287) additionally confirm the positive influence of a differentiated requirement profile on the validity of a hiring decision.

Structured interviews based on thorough job analyses and job requirements, thus, achieved an average corrected validity of $r = 0.87$, and structured interviews based on superficial digit analysis, only $r = 0.59$.

McDaniel et al. (1994, p. 606) could also prove that the corrected validity coefficient for structured interviews with situational questions was $r = 0.50$ in comparison to structured interviews without reference to requirements ($r = 0.44$) and unstructured interviews ($r = 0.33$) (Koppers, 2013, pp. 19–20).

Without diminishing the importance of a requirement profile for a high-quality personnel selection, a requirement profile primarily shows the company's needs at a given time. However, requirements change over time and are sometimes difficult to predict. Therefore, personnel diagnostics should function more as a potential analysis, since future requirements should also be considered in the profile, due to a dynamic and constantly changing working environment. For this reason, recording a person's potential is of decisive importance (Schuler, 2000, p. 13).

#### 3.6.2.1 Requirement-oriented analysis of application documents

The analysis of application documents should also be strictly oriented to the job requirements. However, in practice, several softer and subjective criteria are regularly used in assessing application documents, which do not possess any prognostic quality. For example, in a study by Kersting (2016), 83.6% of all personnel selection managers stated that they pay attention to gaps in the CV. However, gaps in a CV alone do not provide a valid prediction about the applicants' personality or their later success on the job to be filled (Frank & Kanning, 2014).

According to Kersting (2016), other less valid assessment criteria are a clear formatting of the CV, typographical errors, stains in the cover letter (in paper applications), consideration of the reasons for an application in the cover letter, references, the age, or hobbies of candidates (Frank & Kanning, 2014, Kanning 2016a; Quinones et al., 1995; Watkins & Johnston, 2000).

Thus, from a rational-analytical perspective, the analysis of application documents should be based on a requirement-related evaluation of facts and valid data.

#### 3.6.2.2 Systematic selection interviews based on interview guidelines

In selection processes, a lack of standardization, for example, no precise requirement profiles or interview guidelines, can lead to different evaluation standards by the involved selection managers. A binding selection framework can minimize these negative consequences (Kanning, 2015, p. 140). Parts of this "binding selection framework" or standards are requirement profiles with behavioral anchors and interview guidelines. Thus, behavioral requirement profiles and structured interviews

lead to more valid selection results. Above all, structured interviews based on interview guidelines reduce subjective errors of judgment during the decision-making process, which leads to more valid decisions.

### 3.6.3 Better justification and communication of the selection results

In addition, rational-analytical selection procedures can provide more objective and fact-based documentation of decisions for third parties. The executives and personnel managers surveyed in our empirical studies emphasized this and clarified that rational-analytics also includes detailed documentation of the results, based on the requirement criteria. This also ensures traceability by third parties; for example, candidates can be given structured and systematic feedback (Deters, 2019, p. 113).

### 3.6.4 Higher intellectual diversity

"(G)reater diversity, in terms of both gender and ethnicity, is correlated with significantly greater likelihood of outperformance. More than that, fostering a diverse and inclusive culture is a critical success factor: it enables individuals both to shine in their own right and to pull together as a team" (McKinsey & Company, 2020, p. 47). From this perspective, there is a business imperative for diversity (Tsusaka et al., 2019; for the value of board diversity see Hagendorff & Keasey, 2012 or Hafsi & Turgut, 2013). In an increasingly complex world, intellectual diversity can foster creativity and is, thus, a critical success factor for organizations. Intellectual diversity must be explicitly distinguished from diversity in terms of demographic characteristics, such as age or gender. "Just because people look different doesn't mean they'll have divergent points of view" (Hill et al., 2014, p. 139). A broad spectrum of thinking and a variety of ideas, skills, expertise, and experience is crucial to stimulate the exchange of ideas and individual explorative activities (Dahlander et al., 2016, p. 282; Hargadon & Sutton, 2000, p. 159; Taylor & Greve, 2006, p. 735). Intellectual diversity generates diverse and sometimes conflicting perspectives and, thus, causes ambiguity, but this can favor innovative solutions (Garud et al., 2013, p. 793). In addition, the breadth and depth of knowledge of the diverse people involved are considered significant for creativity (Andriopoulos & Lewis, 2010, p. 105; Taylor & Greve, 2006, p. 726). To promote this intellectual discourse, a diverse workforce is required. The most likely way to get this is by reducing biases.

### 3.6.5 More sense of fairness and positive candidate experience

According to Kersting (2008, p. 421), a proponent of the psychometric approach, fairness and acceptance of selection instruments become especially relevant, if several selection procedures appear to be broadly equivalent from a psychometric perspective. Thus, he pleads for selection procedures that, on the one hand, have a high psychometric quality and, on the other hand, meet with high social acceptance. However, for the dilemma between social acceptance and scientific quality criteria, he strongly argues for prioritizing psychometric quality that meets predictive validity, objectivity, and reliability standards (see Sections 3.7.3 and 3.7.7).

If selection procedures are carried out related to the specific job requirements and according to a generally recognized rational-analytical quality standard, the acceptance and sense of fairness will increase among applicants and, so will the trust in the selection managers and the selecting company (Hausknecht et al., 2004, p. 656; Strobel et al., 2010, p. 30; for the limits of acceptance of rational-analytical procedures, see Section 3.7). When candidates feel they are treated fairly, it increases the positive candidate experience.

## 3.7 Limits of rational-analytical personnel diagnostics

Even rational-analytically reasoned management decisions could lead to mistakes, especially in fast-changing environments. We see it in many company failures, financial crises, and poorly selected personnel. This can be due to missing information, insufficient data, perception errors, and so on.

Decision-makers can be blinded by supposed facts and numbers, ignoring that these are also subject to individual representations, constructions, and evaluations. Also, intuitions may produce vague feelings of doubt, warning people that although all facts speak for option A, something feels wrong with this fact-based option A (Glöckner & Witteman, 2010, p. 1).

Thus, a question arises: To what extent can a rational-analytical selection procedure guarantee good decisions? Are the scientific quality criteria a justified fortress against the inner experiences of practitioners?

### 3.7.1 Criticism of rationality as the guiding principle of (post-)modernity

In the course of the Enlightenment and industrialization, belief in human reason and, thus, in rationality became the guiding principle of human thought and action.

This change in numerous areas of life, also known as “modernity,” experienced its boom between the European Enlightenment and the First World War.

Modernity refers to the conviction that societies and sciences can be advanced, almost exclusively, with the help of human reason and rationality. Rationality assumes that human behaviors and decisions should be based on agreeable, transparent, understandable, verifiable, and thus, objective reason. Only with methods and instruments of rational-analytical procedures, human problems and challenges can be brought under control and solved.

Connected to these assumptions, scientists believe in the superiority and supremacy of human reason over human emotion, intuition, or spirituality. Also, the insight that knowledge is constructed and must be critically reflected does not mean that any knowledge construction is of equal value, from a scientific point of view. Different from subjective opinions or convictions, emotions, or spiritual-religious insight, decisions should be based on scientific quality criteria and rationality claims.

Therefore, it is not surprising that modernity and rationality have promoted thinking about universally valid patterns of thought and solutions, and, thus, also about related concepts of society or even concepts of science and research.

Postmodernism expressed doubts about the possibilities of human rationality and reason. In addition, postmodernism accuses modernity of having an unrealistic view of man. On the contrary, modernity has humanistic ideals about how man is or should be (e.g., see the image of man in communism) and, thus, misjudged science and politics with idealistic impositions. From this perspective, modernity can be perceived as a utopia and a nightmare (Bolz, 1997). This is one reason why people developed an ambivalent attitude towards modernity.

It is increasingly recognized that human beings have the potential and competence to be rational, but they are not always "masters in their own house"; and many experiences of human decisions and behaviors or feedback from psychotherapists and psychiatrists (see the publications of Sigmund Freud), underpin this strongly. There may also be the assumption of free will, mainly because humans have a strong sense of freedom and responsibility. Still, neuroscientific studies on the topic of "free will," show, for example, that brain activity correlated with a decision to move can be observed before a person reports being consciously aware of having made that decision (e.g., Libet et al., 1983; Soon et al., 2008; Heisenberg, 2009). But current research findings in free will, particularly from a neuroscientific perspective, are not always clear and must be critically questioned, and further research is needed.

The fact remains: Rationally is not the sole influence in human thinking, deciding, and behavior.

Postmodernism can be seen as an emancipatory movement and a rebellion against the power and objectivity claim of established systems of knowledge and science and, at the same time, a turn to the individual and the particular. Postmodernism is accompanied by a plurality of thought patterns, behaviors, and lifestyles. As a political-artistic-scientific direction, it turns against specific basic assumptions,

methods, and modernity concepts. In this way, postmodernism claims to overcome the arrogance, narrow-mindedness, and self-overestimation of modernity and, thus, the absolute belief in man's rationality.

Apart from the possible risk of relativism, all justified criticism of modernity should not be about declaring reason to be the enemy in general, but about recognizing and taking into account its advantages and, at the same time, its limitations, especially when it comes to explaining human (decision-making) behavior.

### 3.7.2 Limits of rationality – failure of the concept of unlimited rationality

Kanning (2015, p. 138) states that human decisions are subject to several effects that systematically distort judgments. However, it is not only intuitive and emotionally charged judgments that may lead to distortions of perception, but also supposed rational-analytical procedures.

Errors in the process of rational-analytical decision-making are possible, because the information is often incomplete and inaccurate. And, the rational mind can be lazy and is also very limited. Kahneman (2011, p. 411) states that "the definition of rationality . . . is impossibly restrictive; it demands adherence to rules of logic that a finite mind is not able to implement. . . . in fact our research . . . showed that humans are not well described by the rational-agent model."

Thaler (2016) also uses numerous examples to show that people are pretty lousy at being rational. He believes "mental illusions should be considered the rule rather than the exception" (Thaler, 1991, p. 4). The idea that people, and, thus, hiring managers, could always and everywhere behave rationally fails to capture all the details and variability that characterize human behavior (Ceschi et al., 2014). And it should also be considered that "the human mind does not work on information, but on representations of information" (Gigerenzer et al., 2008, p. 1018).

The concept of unlimited rationality or – in economics – the "homo economicus" model or – in psychology – the assumptions of the rational "homo psychologicus" are based on highly simplified assumptions such as omniscience (all relevant information is known) and optimization (unlimited information processing capabilities) in decision-making.

Therefore, the model of rationality is not a meaningful basis in science oriented toward implementation. It was Herbert Simon, in particular, who changed economic thinking by using the concept of "limited rationality." He calls for more realism in research, because the rational choice theory is an unrealistic description of human decision-making (Simon, 1955, 1957, 1959).

Simon put forward ideas of bounded rationality and heuristics. He found that in practice, rationality can't be bound by logic. Real thinking and feeling, and, thus, human behavior, do not follow the assumptions of logical rationality. Humans have a limited working memory system and limited attention. Due to these

cognitive limitations, humans develop adaptive strategies that make trade-offs between the cognitive effort of searching for and processing information and choosing the best alternative. Human decision-making is an adaptive process in which, depending on the context, a balance is sought between the costs of searching and processing information and the quality of the decision. In the real world, such a strategy is a satisfactory alternative, though not necessarily the optimal solution (in decision theory, the term "satisficing" is used). But a satisfying decision is regularly good enough for the decision-maker (Simon, 1955). Thus, Simon proposed replacing rationality and utility maximization with a more realistic view of economic behavior involving satisficing and adapting aspiration levels to success and failure.

Later, the primary concern of Cyert and March (1963) was to deconstruct the fiction of rationality. In doing so, they point to the self-reference of organizational decisions. They show that decision-making is based not solely on rational considerations, but rather on past choices and related experiences.

Evidence from many studies indicates that satisficing strategies provide a more valid description of everyday decision-making behaviors than the expected utility model (Smith & Kosslyn, 2014, p. 400).

Satisficing, as a decision-making strategy, has also been taken up in economic research. For example, Sauermann and Selten (1962) developed the aspiration adaptation theory of the firm. Later, Reinhard Selten investigated the relationship and interaction between rational decision-makers (game theory) and real human beings with bounded rationality. He insists that the assumption of rational decision-making does not capture actually observed human behavior, and that it is necessary to develop a descriptive theory of economic behavior based on bounded rationality and empirical evidence. For his outstanding achievements in economic research, he received the Nobel Prize in economic sciences in 1994 (Selten 1999; Gigerenzer & Selten, 2001).

Management and business research in Germany also integrated the ideas of Simon and Cyert & March (1963) into related concepts of business decision-making and problem-solving behavior (e.g., Kahle, 1973, 2018). On the one hand, this research refers to the use of the term aspiration level in experimental psychological research by Kurt Lewin and, on the other hand, to Simon (1955, 1957, 1959).

In Germany, for example, Edmund Heinen (1962, 1966, 1969) made decisions in companies as the starting point of his research in business administration and management. This was an intensive and thorough review of the American management literature at that time and particularly of Cyert & March (and Simon), associated with a conceptual reorientation of business administration towards behavioral science research results and thought patterns. Decision-oriented business administration said goodbye to rational decision models and turned to practical decision-making problems. Practical decision problems are complex multi-context problems requiring an interdisciplinary approach; and "saying goodbye" to the assumption that

managers and other employees always and everywhere act rationally (Deters, 1990, pp. 303–315).

Research on personnel selection shows that human observation in interviews or assessment centers and the perception of correlations between observed behavior and competencies or personality traits are influenced by the design of the selection process (e.g., use of observation sheets). From a rational-analytical perspective, selection managers should describe the observed facts. But the use, meaning, and purpose of terms used to describe the observations are not independent of the observer. What selection managers in an interview observe and make notes of is not only the image of something; it is also a subjective construction in which individual meanings of words or subjective importance of specific observations play a role (Kappler, 1995, p. 129). When hiring managers think they have an objectively correct view of situations, that is, "naïve realism" (Ross & Ward, 1996).

Insights of the research of Damasio and his colleagues show that judgments in the face of uncertainty and complexity are influenced by "somatic markers" as emotional signals (see Section 4.2.5). For example, these emotional signals are established by conditioning or learned processes that warn human beings about threats and opportunities or that something important is about to occur. They show that, in practice, rational-analytical procedures are often supplemented or replaced by a more automatic, emotional, and intuitive process (Damasio, 1995; Smith & Kosslyn, 2014, p. 418). Emotions and intuitions interfere with rational decision-making and may play adaptive and dysfunctional roles in decision-making processes. In personnel selection processes, these emotional signals send information, such as whether the "chemistry" between people is perceived as good and whether someone fits into the team or seems authentic or not. If the chemistry between people is good, they trust and like each other, act like each other, act and react successfully with and to each other, and are convinced to rely on each other (Bastian, 2018, p. 152).

Specific feelings can be warning signals that a possibly important criterion for personnel selection has not yet been considered when making a judgment. For example, emotions guide human behavior and lead people to choose immediate gratification; humans, very often, do what provides satisfaction now and today, and not what would be better for them, in the long run. This particular feeling must be identified, named, and reflected upon as a criterion for selecting people.

Laske and Weiskopf (1996, pp. 310–312) argue that hiring managers are not like blank sheets in the selection process, unaffected by the experiences of yesterday, as if their perceptive skills were independent of previous experience, opinions, or judgments. Hiring managers are not passive individuals. Instead, they act in a social and cultural context of values and beliefs, political considerations, coalitions of roles, interests, and power, shaped by history, geopolitics, culture, economic situation, and so on.

The rational-analytical procedure recommends that selection managers operationalize their decisions by listing and comparing selection criteria and requirements,

in a table. This procedure should – from a psychometric perspective – be based on a framework that allows reliable measurements of the different facets of an applicant's competencies, personality, and other attributes. Based on this rational analysis, there is a clear first choice, but, often, some of the selection managers nevertheless feel uneasy. They sense that something does not feel right or some critical selection criteria are missing, which are not easy to formulate and operationalize. These criteria often relate to a feeling that people will fit together on the human-emotional level, that someone reflects the company's values, and that people can rely on each other, find each other likable, or enjoy working together. Although these feelings and intuitions are complicated to operationalize, they cannot be denied; they are there and influence people's judgments and decisions.

In order to reduce these individual influences, training is required. "Training programs are conducted to minimize the effects of interviewers' implicit personality theories upon their judgment" (Herriot 1989, p. 171).

> Experience . . . leads to the development of 'blueprints', 'interpretation schemes', 'patterns', 'templates' and 'theories' which make bracketing easier. In imposing these on the world, one completes the first stage of enactment, limiting the variety of stimuli to make sense of. There is a paradoxical aspect to the use of all kinds of schemes: that much as they facilitate life in general and organizing in particular, they also act as blinders; the more successful they are used, the more resistance they create when the attempt is made to dispose of them (Czarniawska-Joerges, 1994, p. 9; quoted in Laske & Weiskopf, 1996, p. 310).

Suppose practitioners have adequately implemented a psychometric selection procedure, a possible restricted view and narrowed perspective of hiring managers should be considered (Laske & Weiskopf, 1996, p. 300). The psychometric approach assumes a distinction between the subject and the object. What is "out there" (objective) is presumed to be independent of the subject (the hiring manager), and knowledge is achieved when a selection manager correctly mirrors or represents objective reality.

With reference to Barlow (1989, p. 502), Laske & Weiskopf state that selection managers and applicants influence each other. Personnel selection is a social process in which different actors define, negotiate, or modify their interests, interpretations of situations, and expectations and act or react, based on their constructed realities. The image of the hiring manager adopted in psychometrics is that of an ideal individual, which differs significantly from empirical hiring managers (Laske & Weiskopf, 1996, p. 306). There is no independence between assessors and applicants; instead, they are mutually related. Together, they constitute a social situation.

The rational-analytical selection approach does not acknowledge this appropriately. Instead, organizations, selection methods, and theory building in the psychometric approach are conceptualized as rational-analytical (Laske & Weiskopf, 1996, pp. 310–311).

According to Laske and Weiskopf (1996, p. 312), the independently existing, empirically with the help of psychometrics, clearly ascertainable individual can only

be described as an invention of poetic freedom. Therefore, it is necessary to carry this assumption to the grave.

Reasoning and rational-analytical procedures in personnel selection have their limits. These limits should be recognized and reflected upon, critically and constructively. Thus, the concept of rationality is not suitable for explaining or predicting human decision-making behaviors, and, thus, it`s not a suitable basis for theory building in management and, especially, personnel selection.

### 3.7.3 Limits of objectivity

Objectivity is considered a fundamental quality feature in personnel diagnostics. Objectivity means that the results of a personnel diagnostic procedure are free from situational influences such as time, noise (see 3.5.2.4), or room (Schmidt-Atzert & Amelang, 2012, p. 132). The objectivity of personnel selection is considered high, if the individual influence of the selection manager on the decision and, thus, on the results, is as low as possible (Kanning, 2004, p. 165). In an objective process, it does not matter whether the personnel selection is carried out by manager A or manager B. The procedure should be designed so that both selection managers reach the same result, independently (Kanning, 2004, pp. 164–165). Thus, objectivity means that the results of a selection process should be independent of environmental factors, especially selection circumstances and the recruiters (Amelang & Zielinski, 2002, p. 13). Thus, it can be seen as an expression of quality in personnel selection that the outcome of the selection process should not depend on who is, coincidentally, the interviewer or assessor in an assessment center (Schuler, 2014, pp. 52–53). Objectivity means freedom from bias, discrimination, arbitrariness, and subjectivity.

The psychometric approach requires selection managers to use or be replaced by psychometric methods, as much as possible, mainly to prevent selection managers from being disturbing factors with their intuitions, emotions, moods, and so on.

Also, selection managers should be aware of their possible biases, prejudices, and so on, and try to eliminate or reduce them; and they should observe applicants' behaviors independently; the registration and scoring of behavior observed should be done, without the knowledge of the observations of the other hiring managers (Bühner, 2010, p. 78). Thus, the candidate's performance should be evaluated and interpreted independently (Kanning, 2004, p. 165).

An essential question for evaluating the quality of personnel selection is: Are there objective criteria for the "correct" understanding, interpretation, and evaluation of application documents and verbal and non-verbal messages, and so on of applicants? And are these criteria superior to subjective assessments, from a rational point of view? These topics, discussed in hermeneutics, aim to avoid (subjective) arbitrariness in evaluating applications, candidates, and so on, as far as possible (Hösle, 2018).

The psychometric approach is based on the idea that an objectively identifiable reality exists and can be described according to, at least, "intersubjectively" agreed criteria; and this "objective reality" can be measured by scientific methods: Within the long tradition of employee selection based on individual differences, one of the main assumptions concerns the idea that human beings can be reduced to relatively independent traits, attributes, skills, and abilities, which can then be reliably and validly measured (Dachler 1989, p. 53). The assumption is that psychometric selection procedures can carry out an objective selection process.

As described in Section 3.5.2.10, a common mistake in the selection process is that the interviewers quickly form an opinion regarding the interviewee. In addition, hiring managers strive to eliminate contradictions and ambiguity and try to achieve consistency in their perceptions. As a result, unstructured interviews can lead to a self-fulfilling prophecy by primarily addressing topics that are particularly important to the manager personally, or that stand out subjectively in the application documents, while other relevant aspects are overlooked.

These subjective impressions influence the interviewer's behavior, which, in turn, affects the answers and the behaviors of the interviewee. In a fully structure d and standardized interview, both the selection manager and the applicant may feel emotionally uncomfortable and insecure in this tightly regulated situation. In this very regulated form of interviewing, both interviewer and applicant may miss the individual approach to each other, and hence, this selection method may be judged negatively. If the process is unstructured, applicants can only be compared to a limited extent, and even more effects such as the focus on irrelevant information may impact the interviewer. For this reason, a semi-structured interview is recommended: the candidate can be approached, while a guideline ensures comparability (Müllerschön, 2005, pp. 79–81).

Implementing guidelines (e.g., DIN 33430 or ISO 10667) for assessing and interpreting the collected information can promote the objectivity of a selection situation (Schuler, 2004, p. 41). A careful and prompt recording of observations and answers is a reasonable basis for later scorings. However, logging afterward is disadvantageous, since the memory can be distorted (Strobel et al., 2010, p. 28).

Nevertheless, even the most methodical care and practical experience cannot always prevent hiring managers from behaving contrary to the principles of psychometric theory.

Apart from individual differences in information processing, experience shows that selection managers gradually modify how they conduct their interviews over time, adapting them to their individual needs and no longer adhering to predefined interview modes. These so-called destructuring processes (Dipboye, 1994) can be observed in all selection instruments, over time: The longer practitioners use a selection instrument, the more independent and detached from the prescriptions and guidelines they feel (Strobel et al., 2010, p. 27).

Evaluations of assessment centers show that they have an excellent predictive, but often, a deficient construct validity, if they are created based on psychometric recommendations. Halo effects often cause this. Additionally, ratings in assessment centers are situation-specific, and the assessors can often not distinguish clearly between the most diverse requirements or observation dimensions (Sackett and Dreher (1982, p. 406). Klimoski and Strickland (1977, p. 355) speak of "indirect criteria contamination," which states that observers do not objectively refer to the requirement dimensions relevant for assessment, but that they intuitively contaminate their assessments with their own "implicit criteria" without being aware of it. In addition, specific behaviors in assessment centers are challenging to observe, making it difficult to compare applicants objectively (e.g., in a group discussion).

Höft & Kersting (2018), or International Taskforce on Assessment Center Guidelines (2015), have developed standards and guidelines for specific procedures in assessment centers or other selection processes. However, Höft & Kersting show that many large German companies employ poor practices in assessment centers: The observers may receive preliminary information about the applicants and, in some cases, can already get to know each other before the assessment process starts. This favors, for example, the bias of confirming the initial impression (confirmation bias). In addition, during breaks or meals, the assessors talk about individual applicants or even directly with applicants, forming impressions about them. These informal contacts lead to the risk of assessors being guided by personal critical selection criteria rather than the requested and agreed upon selection criteria.

While trained selection managers may be able to reduce their prejudices, biases, and so on, coming to the same result, regardless of the assessor, is very difficult. This demand for objectivity may work when using tests, for example, for reading the result of cognitive ability or personality tests. But a critical issue in recruiting objectively is how HR managers agree on what behaviors they perceive in applicants, and how they evaluate these observed behaviors.

To reach objectivity, the rational-analytical approach of psychometrics requires evaluation templates or rating scales; an applicant's observed behaviors and answers should, therefore, be scored by numbers accordingly, to express how well the applicant meets the requirements. It may be possible that interviewers or assessors can independently make their observations and evaluations. However, if they present their evaluations to each other and discuss them, they do not come to the same result independently of each other. Instead, they influence each other, through discussion. The same problem applies to the evaluation of observations in assessment centers. Thus, they don`t reach objectivity but intersubjectivity (see the end of this chapter and Section 9.6).

Therefore, it is recommended not to discuss the individual interviewers` or assessors` results from a psychometric perspective. Instead, the quantified results of

the interviewers/assessors should be added, an average should be taken, and the applicant with the highest overall score should be selected.

Certainly, objectivity can be increased this way, but how individual recruiting managers assess concrete answers or applicants' verbal and non-verbal behaviors is always influenced by their individual and subjective perceptions. If managers find applicants likable and particularly suitable from their subjective perspective, there is a risk that they will, accordingly, rate them high. Thus, although hiring managers are instructed to leave their subjectivity away, at the end of the day, when they review the collected data and have to evaluate and score them, it's their feeling and intuition that is their counselor in decision-making (Koppers, 2013, pp. 6 and 10). The evaluation of behavior in numbers, then, only reflects a pseudo-objectivity.

Even if personnel selection processes are rationally-analytical and psychometric, it cannot be excluded that recruiters who see their assessment results expressed in numbers will receive "inner signals" of intuition telling them: That's not right, we shouldn't hire this candidate. For example, an interviewed manager states: "If I find something positive from my feeling, I interpret the facts accordingly. And if I have a negative feeling about an applicant, I interpret and score the facts so that they correspond to my impression" (Soffner, 2021, p. 83).

In a rational-analytical procedure, subjectivity is seen as a distorting factor in searching for a candidate's "true nature." In its purest sense, this idea of objectivity assumes that truth or independent reality exists outside of any social investigation or observation. Objectivity attempts to uncover truths about the natural world by eliminating personal biases or emotions. The task of a selection manager is to uncover this reality, without contaminating it in any way. However, in a selection interview, this notion that a human being can observe or uncover phenomena without affecting them is illusory.

The objectivist assumption and search for a true and stable nature may exist in the natural sciences or certain scientific laboratory situations. However, there is no immutability in social environments, where people deal with people who have gone through specific socialization and always decide and act in certain changeable contexts. Nor do such stable and unchanging contexts exist for organizations that compete.

According to Klopprogge (Klopprogge et al., 2019, pp. 222–224; Klopprogge, 2022, pp. 305–311), there is a risk that the objectification of personnel selection can jeopardize necessary changes in organizations, because tasks and job requirements are already defined in advance, and all new employees are only expected to fit into them as precisely as possible. The requirement of matching applicants to a specific job presupposes a static understanding of organizations, environments, tasks, and people. Jobs and, thus, requirements change over time, however. People also fill their jobs individually and continue to develop.

Sherman, Nave, & Funder (2009) state that it is often presumed that objective measures of behavior (e.g., counts of the number of smiles in an interview or assessment center) are more scientific than more subjective measures of behavior (e.g., ratings of the degree to which a person behaved cheerfully). However, they show that the apparent objectivity of any behavioral measure is illusory.

It is possible to reduce biases, but "pure reason will never win," says Treufetter (2009, pp. 21–23). Even if pro-contra-lists or other supposedly rational decision-making aids are used, human judgments will always be distorted to a certain degree. Whether in the reviewing of documents, in interviews, or assessment centers: When people are involved in observation, implementation, and the evaluation process, they will inevitably be influenced by perceptional distortions, bias, and other effects such as likability, since the human psyche wants to avoid contradictions in the formation of judgment and strives for consistency.

Since absolute objectivity is impossible in personnel selection when people are involved, Laske and Weisskopf advocate striving for intersubjectivity (1996, pp. 312–315). They suggest that the various subjective impressions of hiring managers should be brought together and integrated into intersubjectivity. Thus, they propose to speak of intersubjectivity instead of objectivity, since this is achievable.

Personnel selection should be as objective as possible to avoid bias, arbitrariness, and discrimination. Psychometrics offers various procedures to increase objectivity. However, it is also important to name the limits of objectivity and reflect upon them critically and constructively. This is especially necessary for selection managers.

In the psychometric construction of objectivity, feelings are equated with critical biases. But that's not always the case; intuitions and feelings can be valuable sources of information. Hence, apart from whether managers can actually succeed in turning off emotions and intuitions, there is also the question of whether intuitions and emotions can provide valuable and essential clues for the right selection of personnel.

### 3.7.4 Limits to separating observation and evaluation/scoring

Confirmation bias involves favoring information that confirms previously existing beliefs, for example, an applicant's suitability for a job. Rational-analytical personnel diagnostic processes require separating observation and evaluation in interviews or assessment centers, to reduce confirmation bias.

In an interview or assessment center, recruiters are expected only to "observe and record candidate behavior, classify these behaviors in dimensional terms, and provide dimensional ratings. Afterward, the assessors should gather to assign an overall assessment rating to each candidate (e.g., select, reject, promote, develop, etc.) by discussing behavioral observations and discrepancies in ratings" (Lievens &

Goemaere 1999, p. 215). But, in practice, recruiters – although they may have attended appropriate training and try to record only what they observe (behaviors, words/phrases spoken by applicants, and so on; the facts and no interpretations) – have difficulty making distinctions between observation and the interpreting and rating process. "(A)ssessors (especially line/staff managers) often made no distinction between observation and evaluation processes and gave global judgments" (Lievens & Goemaere 1999, p. 217).

Although a "Realistic Accuracy Model" (RAM) to clarify success-critical aspects of monitoring and assessing candidates is scientifically developed (Funder, 2003, 2012; see Höft & Kersting, 2018, pp. 36–37), and although selection criteria are operationalized, and training in selection procedures is conducted, human beings have a lot of difficulties in clearly separating observation, assessment, interpretation, and evaluation. Humans are not passive observing beings. They are actively participating social beings. What they observe and how they observe, is always influenced subjectively, and this subjectivity cannot be eliminated entirely. Even if only the observations are to be written down in an assessment center, subjective unconscious evaluations are included and determine what is perceived and what is written down as an observation.

The coherence effect also plays a role. The coherence effect represents a distortion caused by bidirectional activation and describes the phenomenon that information is not objectively incorporated into decisions. Instead, it is unconsciously revalued when decisions are made to fit the preferred interpretation (see confirmation bias). Subconsciously running cognitive processes enhance coherent information and devalue opposing information (Glöckner & Towfigh 2015, pp. 272–273).

The difficulty in separating observations and evaluations of candidates is also understandable from a neuroscientific perspective; the human limbic system sends positive or negative assessment and judgment impulses much faster than the conscious mind. These impulses can be described as intuitions. Therefore, intuitions and, thus, former experiences and associated emotions influence how people observe, what they observe, and what is reported. Hence, separate observation and evaluation in practice is challenging, if not almost impossible, since what people observe is already influenced by evaluations.

### 3.7.5 Social influence of the other selection managers

Even if each selection manager makes his/her observations and, in particular, evaluations independently of the other selection managers and the observations and evaluation results are recorded in writing, social influence by discussion cannot be excluded. For example, at an assessor conference at the end of an assessment center or in a discussion after a job interview, selection managers/assessors exchange their observations, impressions, and evaluations. During this exchange,

communication and persuasion skills play a significant role. In addition, hierarchy effects or possible feelings of competition between selection managers can also influence the judgments.

Therefore, a selection procedure may meet the highest psychometric requirements; however, when people discuss their impressions of an applicant, they cannot exclude the influences of the hiring managers' communication and social skills, hierarchical power, personality, and so on.

### 3.7.6 Limits of selection decision rules – no rule without an exception

Decision rules for selection are not simply learned or observed but are interpreted subjectively and implemented context-specifically. Particularly, in more individualistic cultures, people want autonomy and the freedom to understand the meaning and benefits of rules for themselves and in their specific context. Thus, decision rules are broken, in practice, when it seems reasonable in a company-specific or personal sense.

Kanning (2019, pp. 345–346) states that decision-making rules often meet with little acceptance and approval, in practice. For example, he refers to studies showing that fewer than 50% of medium-sized companies use formalized decision-making rules. Only 18% of companies compare the results of an applicant assessment with a detailed requirement profile. He attributes it to that HR managers probably feel restricted in their freedom by such rules. Thus, Kanning states that decision-making rules should not be perceived as control but as a helpful instrument to reduce poor selection decisions. Those responsible for selection should not stubbornly follow the rules. Instead, they should be trained in using decision-making rules and regularly reflect and review them regarding their fit and benefit for the company, and even in the individual case of a specific applicant.

Decision rules and cut-off scores are based on value judgments. From a scientific perspective, there is no clear solution for setting correct cut-off scores. Cut-off scores are not always scientifically justifiable but are regularly based on personal, social, and economic values and practical considerations. This is particularly the case, if the personnel selection decisions consider not only later professional success but also take into account economic conditions such as the labor market situation, or social or legal considerations such as promoting diversity or ethnic minorities, and avoiding discrimination (Schmidt-Atzert & Amelang, 2012, pp. 422–423).

The example of job analysis can illustrate further limitations of psychometric methods. According to Reimann (2010), a proponent of the psychometric-oriented DIN 33430, three methodological approaches can create a requirements profile. One of these is the experience-based intuitive method. A prerequisite for using this method is that the person carrying out the analysis has the necessary knowledge and experience. This procedure is expressly regarded as compatible with the DIN

33430. Here, it becomes clear that the intuitive experience of experts should be used (Reimann, 2010, p. 103). The DIN 33430 as a process norm virtually demands the use of expert judgments in selection processes. Intuition is, therefore, required in the experience-based intuitive method of job analysis.

A fundamental rule is that personnel selection should meet the job requirements. But often, the job market does not provide correspondingly qualified applicants. For example, police or army vacancies in Germany cannot be filled with people who meet the required qualifications. Thus, the requirements are lowered (Sanches, 2020). This means that minimum job requirements and the use of decision rules are not only determined by the demands to be met but also by labor market conditions.

As shown in Section 3.7.3, hiring managers know how an applicant should score in an interview or an assessment center to be shortlisted, in practice. If a candidate is likable from the subjective impression of selection managers, the score on their observed behavior is likely to be high. Rules agreed upon will, therefore, not preclude subjectivity.

### 3.7.7 Limits of validity

One of the factors determining the economic value of a selection procedure is the variability between the output of employees selected by a specific process and those selected randomly (Hunter & Schmidt, 1990, p. 28). The term validity is defined as the degree of appropriateness, significance, meaningfulness, and usefulness of inferences drawn from tests and other selection scores. Predictive or criterion-related validity is the extent to which the results of an implemented selection procedure can predict future outcomes and performance on the job.

High validity is shown when low predictor scores (e.g., scores in an interview or assessment center) correlate with low scores on the specific external criteria (e.g., performance on the job) and when high predictor scores translate into high scores on these criteria (Jackson et al., 2012, p. 236).

This (predictive) validity is the central quality criterion, as, without it, the scores in selection would not be interpretable (Tippins et al., 2018, p. 4).

The importance of validity for the success of personnel selection is emphasized by Schmidt et al. (2016, p. 48):

> The validity of the personnel measure (or combination of measures) used in hiring processes is directly proportional to the practical value of the method – whether measured in dollar value of increased output or percentage increase in output. In economic terms, the gains from increasing the validity of hiring methods can amount, over time, to literally millions of dollars. However, this can be seen from the opposite point of view: By using selection methods with low validity, an organization can lose millions of dollars in reduced production, reducing revenue and profits.

But many employers throughout the world are currently using suboptimal selection methods such as handwriting analyses (graphology with a validity of 0.02) or using age as a basis for hiring, although the age of job applicants shows no validity for predicting job performance (Schmidt et al., 2016, pp. 33 and 37). Also, personality traits such as extraversion (0.09), openness (0.04), or agreeableness (0.08) have relatively low validity. Schmidt et al. (2016, p. 33) write that these results are counter-intuitive findings for many people.

As shown in Section 3.2.3.1, structured and unstructured interviews can have the same high validity (0.58); thus, it is possible to conduct unstructured interviews with high validity. An explanation is that these unstructured interviews are conducted by skilled hiring managers with significant interviewing experience and a repertoire of effective interview skills (Oh et al., 2013).

Since Schmidt et al. (2016) show that valid selection interviews can be conducted based on experience, this indirectly speaks for the importance of intuitions, known to be based on experience.

Koppers (2013, p. 50, with reference to Ryan & Sackett, 1989) states that experienced hiring managers come to more accurate personnel decisions than novices. Due to their years of experience, they may be capable of fast and differentiated pattern recognition. However, this assumption has not yet been clearly confirmed. In fact, research in psychodiagnostics shows that experienced and novice clinical psychologists do not differ in diagnostic accuracy (Skvortsova et al., 2016). Thus, these researchers conclude that decision-making accuracy may not be primarily a question of extensive experience but of conscious deliberation about the task.

Kanning (2012, pp. 11–12) reflects critically on whether professional experience – operationalized by the length of time the selection manager has been engaged in a specific activity such as personnel selection – is enough to ensure the future professional performance of hiring managers.

Simple repetition may increase the subjective certainty in the decision-making process,

but not necessarily the personnel diagnostic objectivity and validity of the decision (Kahneman & Klein, 2009, p. 518). This insight is supported by a meta-analysis by Quinones et al. (1995). They found that the predictive validity of the mere duration of the professional activity only reaches a score of $r = .21$. That is better than nothing but hardly justifies relying only on the period of experience of selection managers (for a more detailed description of experiences as an aspect of intuition, see Section 4.2.1).

Experience through practice and education means more than a certain number of years in a particular job. Apart from the fact that the situational conditions in which this experience was gained must be taken into account, it is evident that expertise should also be based on a corresponding broad and deep competence in terms of knowledge and skills in personnel selection, and a critical-constructive reflection and evaluation of the selection decisions made.

Kahneman and Klein point out that the extensive experience of an expert in a regulated environment can reduce the error rate of intuitive decision-making (Kahneman & Klein, 2009, p. 515). Due to the dependence of judgment on the experience and competence of the decision-maker, it is recommended that persons make decisions with high expertise. In addition, the ability to process large amounts of information quickly and efficiently is characteristic of an expert (Kahneman, 2011, p. 457).

Studies on the validity of selection procedures are challenging to evaluate and compare, as the measurements of the required competencies and the outcome or performance measures (external criteria) differ across studies and job profiles (DeNisi & Murphy, 2020, p. 116). For example, the validity of assessment center scores varies from study to study and ranges from 0.37 to 0.71, depending on practical implementation and compliance with psychometric quality criteria (Höft & Funke, 2006, p. 162; Schmidt & Hunter, 1998, p. 265). This variance is due, among other things, to the influence of subjective assessment errors, the degree of standardization, the learning effects on the application side, and the requirement reference of the exercises. This means that reliable statements on the quality of a selection process can only be made, if the concrete implementation of the respective procedure and the requirements of the target position are considered.

Scullen et al. (2000) show the influence of individual rater personality on ratings and how the rating of the same employee can differ depending on the rater. "In light of these findings, we renew the call for research investigating ways to decrease idiosyncratic rater biases while increasing the amount of actual rater performance in performance ratings" (Scullen et al., 2000, p. 969).

The evaluation of validity strongly depends on situational circumstances. On the one hand, the validity level strongly depends on the selection procedure's reliability. Sufficient reliability, in turn, can only be achieved through optimized objectivity. On the other hand, every deviation of the reliability from the value of 1.0 inevitably leads to a decrease in the correlation between the result of the selection procedure (predictor) and the criterion (for example, performance in the job).

The measurement of job performance still proves to be a significant challenge for both practitioners and researchers (Murphy, 2008, p. 148). Thus, a key question is: How can we measure job performance accurately? In general, employee performance is determined by and is the result of successfully using employee competencies, as manifested in the contingency approach: Maximum performance can be achieved when an individual's competencies and "capability or talent is consistent with the needs of the job demands and the organizational environment" (Boyatzis & Boyatzis, 2008, p. 6). Employee performance can be measured against job-specific requirements (Schuler, 2014, pp. 144–145).

Objective measures of employee performance are linked to measurable outcomes and are, therefore, often, backward-looking, for example, sales figures, output rates, and absenteeism rates (Murphy, 2008, p. 149). In practice, objective measures are often difficult to be applied, especially if there is no direct link between

employee performance and profitability. This is due to the fact that the performance of most employees is only partially quantifiable or can be depicted in key figures or KPIs. The most common method to measure employees' job performance, in practice, is performance ratings given by the supervisor(s) or other stakeholders in an organization (Wall et al., 2004, p. 97). Compared to objective measures, subjective performance measures capture qualitative job dimensions, such as openness to effectively acquiring new knowledge and skills and sharing them with others, supporting the team, communicating behaviors, and employee commitment and loyalty to the company.

Moreover, they are based on the supervisor's individual perception of an employee's performance (Fehrenbacher, 2019, p. 31).

Regularly, performance is measured at the individual level in organizations, but this individual performance depends, to a large degree, on the context (e.g., the effectiveness of processes, technology used), the team performance (e.g., the shared understanding of goals, mutual support, and interpersonal interactions), leadership (e.g., managers with poor emotional competencies such as in empathy, emotional regulation, and social skills regulation will be more likely to use bullying tactics, demotivate employees, not create effective relationships with their fellow workers), and so on.

Here, it must be seen that performance appraisals by supervisors can also be influenced by the goal of motivating employees; as a result, the performance can be evaluated higher. For example, in some organizations, performance ratings in a team or department are based on the assumed Gaussian normal distribution or bell curve (O`Boyle J. & Aguinis, 2012, p. 79), although the performance of the employees may not be normally distributed. Or the performance measure is influenced by prejudices, stereotypes, and other biases such as recency bias or by the rater`s motivation to give accurate ratings. In practice, supervisors, sometimes, must adhere to a fixed monetary budget in their performance ratings; these budget constraints can trigger conscious rater biases, such as underrating an employee's performance to avoid pay rises or bonus payments.

However, primarily objective measures alone cannot perfectly capture all performance dimensions, such as creativity, and often neglect contextual and team performance factors and are not applicable in all organizational settings (Kalefeld, 2021, pp. 9–11).

Consequently, many performance measures are not valid indicators of individual employee performance (Webber et al., 2020, pp. 98–99). Therefore, for psychometrically valid correlations between scores in a selection process and performance on the job, subjective performance evaluations must be seen critically, and limits of objective performance measures should be considered.

A study by König et al. (2012, p. 249) shows that Chinese candidates use self-presentation tactics and lie as much as American candidates in the job interview, but significantly more than their European counterparts. Thus, it happens repeatedly

that interviewers can be influenced by "good faking" by applicants. In a study, Buehl et al. (2019) found that 90% of all applicants in job interviews (in Germany) try to present themselves favorably and give untruthful answers to create a better impression. Even trained and experienced selection managers find it very difficult to recognize whether an applicant is really honest in the interview. This study shows that honest applicants were rated lower than dishonest ones.

Research by Ingold et al. (2015a) shows that the self-presentation tactics of candidates, such as faking (e.g., on personality inventories), were positively related to supervisors' job performance ratings. Still, impression management in interviews did not relate negatively to job performance, although also not positively. Also, candidates who dissimulate are more likely to use impression management in selection processes. Thus, the question arises: What value do procedures such as personality inventories have, if faking may positively correlate with performance?

Researchers often do not use similar approaches and methods when comparing validities of assessment centers, structured interviews, cognitive-ability tests, or personality tests. Thus, we must know more about the constructs measured within specific evaluation procedures. Without such information, comparative evaluation of validity is almost meaningless (Robertson & Smith, 2001).

In concrete terms, a selection procedure with a predictive validity of $r = 0.30$ can ultimately be more valid than a selection procedure with a validity of $r = 0.50$ (Schmidt-Atzert & Amelang, 2012, p. 153).

The better a criterion can be expressed in numbers or scores, the higher the reliability. Thus, Viswesvaran and Ones (2017) state that a general definition of the construct of job performance reflects scalable behaviors that can be evaluated.

Also, because success on the job is often not directly observable and scalable, measurable indicators such as salary progress, promotion on the career ladder, achieved sales, training grades, job knowledge test scores, or supervisor ratings are used.

This raises the question: After what period of employment should the success on the job be measured (after six months, one year, or two years)? For example, research on the validity of assessment center scores in Germany shows that predictive validity is most meaningful after approximately two years between the selection procedure and the analysis of success criteria (Holzenkamp et al., 2010, pp. 17–25). However, this is not the case in many validity studies. Therefore, the problem of comparability of results from validity studies also arises, here.

However, it is also essential to question whether the scores of a specific selection method (e.g., assessment center scores) are valid for the performance outcomes on the job. Also, the extent or cut-off of a predictor score, for example, the scoring in an assessment center, to predict future job performance successfully, should be evaluated regularly.

Threats to the validity of any criterion measure and, thus, criterion contamination and criterion deficiency can result from external circumstances such as (in-)

competent leadership (e.g., uncaring leaders who do not ensure their employees feel valued and supported), economic situation, and the idiosyncratic rater effect. Or a flawed onboarding process can lead to lower levels of employee engagement, lower employee confidence, a lack of trust within the team, and, thus, negative impacts on the performance. This has nothing to do with how the personnel selection is carried out.

Criterion contamination also occurs when the criterion measure includes aspects that are not part of the specific job or is affected by construct-irrelevant factors (e.g., age, attractiveness, and gender). Finally, criterion deficiency occurs, when the criterion measure fails to include or underrepresents essential aspects of the criterion construct; it is the degree to which the used criterion fails to overlap with the conceptual criterion, in practice. Criterion contamination is most profound when construct-irrelevant factors that influence the criterion measure are correlated with the predictors. Similarly, criterion deficiency is a problem when the criterion measure fails to include elements of job performance related to the predictor constructs (National Research Council, 1991). While these errors can be reduced by good operationalization of the criterion and the predictor constructs, they can never be eliminated entirely.

Thus, an important question is, for example, whether the superiors' rating of employees' performance on scales is a reliable and valid criterion. The content of the selection method (e.g., exercises in an assessment center) should match the tasks, responsibilities, and requirements of the specific job. In particular, content validity requires that predictor and criterion are symmetrical. This means that the predictor covers the same aspects and is measured on the same level of abstraction as the criterion. Here, the problem that the performance criteria used by the supervisor and the criteria for selecting an applicant do not necessarily coincide arises. There is also the risk that the scales used for the predictor and criterion are nominally the same but that the same designations conceal different content-related ideas (e.g., what is meant by the ability to work successfully in a team or by assertiveness). In addition, sample size and individual characteristics of the sample influence the validity (Schmidt-Atzert & Amelang, 2012, pp. 156–161).

The "Idiosyncratic Rater Effect" states that people are pretty bad at evaluating others objectively and reliably. Thus, evaluations and ratings by superiors often generate insufficient data. It is not that some managers misevaluate employees on purpose, but that unconscious biases, selective perceptions, individual experiences, and so on, can lead to very subjective evaluations. Thus, the assessment of employees has a lot to do with the rater. Buckingham (2015) refers to studies that found that more than half of the variation in a manager's ratings could be explained by the unique rating patterns of the individual doing the rating: In the first study from 1998, it was 71%, in the second from 2000 it was 58%, and in the third from 2010 it was 55% (Mount et al., 1998; Scullen et al., 2000; Hoffman et al., 2010). Hiring managers are human and, thus, prone to subjectivity – there's no way around it.

Further sources of criterion contamination are, for example, that assessors are not only guided in their assessments by the job requirements but also by implicit subjective selection criteria such as habitus, personal liking (e.g., if the applicant suits me and my values), behavior during breaks, clothes, attractiveness, small-talk competence, bias, noise, and so on.

Criterion contamination can also result from a self-fulfilling prophecy (Klimoski & Strickland, 1977). Successful participants in an interview or AC are strengthened and supported in their self-confidence and are more motivated and goal-oriented concerning their career development. Supervisors or other personnel managers who selected and hired these candidates may treat these new employees, preferentially.

Or dissimulation of supposedly desired behavior can lead to criterion contamination. Candidates know the rules and structure of the AC and may have prepared themselves with a trainer or consultant to behave accordingly. They show practical intelligence, competencies, adaptability, and a "feeling for socially recognized behavior." Impression management can also lead to criterion contamination. But the connections, here, should be investigated by further research.

Personnel economics (Lazear, 1995, 1998, 199; Backes-Gellner et al., 2001, pp. 395–396; Backes-Gellner, 2004) and the principal-agent theory (Jensen & Meckling, 1976) can also give fascinating insights into the process of "objective" performance evaluation. For example, a significant problem in measuring employee performance is setting a standard to judge the performance. In practice, setting an absolute objective performance standard is rarely used, because it is costly and only appropriate for simple repetitive tasks or activities, where employees' output can be clearly operationalized and measured. However, this is difficult for many activities and complex jobs, such as how someone interacts in a team and communicates with colleagues. Therefore, in practice, one often must rely on subjective feedback from supervisors, colleagues, customers, and so on. Often, some form of relative performance evaluation is used by comparing an employee's performance to that of his peers. Thus, performance evaluation is often based on a supervisor's subjective impressions and opinions.

A further problem could be that supervisors may underrate the performance of employees, for example, to avoid having to pay a bonus, or perhaps be rewarded for cost savings; or simply because they don`t like someone. Or employees may focus on the quantifiable goals to be achieved and neglect other important tasks. Employees might also actively attempt to influence the appraisals of the supervisors, for example, by influencing the performance information going to the supervisor.

In recent years, many companies, especially in Germany, have abandoned individual goal-setting systems and quantifiable performance measurement systems, because managers fear that these objective performance measuring systems could demotivate employees (e.g., because they do not see themselves as holistically valued and appreciated by the evaluation that is oriented to purely quantifiable goals), disrupt team spirit, and so on. In addition, managers may shy away from confronting

employees if they have not met their goals, and therefore, a bonus may have to be cut. Moreover, agreeing on individual goals is very time-consuming, especially if the goals should be formulated in a SMART way (Specific, measurable, acceptable, realistic). Finally, the holistic performance appraisal of employees cannot only be evaluated by objective data, because subjective impressions will always play a role (Marquardt, 2017).

Performance is socially constructed and determined by each person's subjective perception of, and interaction with, situational characteristics to a certain degree. Performance assessments reflect the individual experiences, the meanings, intentions, and interpretations of individuals involved ("the interpretive community"), and the social structures in the assessment context. Industrial and organizational psychology research findings show that job performance lacks temporal stability, especially in highly complex jobs. Also, situational changes can affect an individual's motivation or opportunity to perform. The result is that the individual works at varying levels of effectiveness at different times during the performance period (Motowidlo & Kell, 2012). Thus, for Holzenkamp et al. (2010), it would be more meaningful to analyze job performance over a more extended period, conceptualize it in episodic terms, and assess it by ratings from different sources.

Furthermore, it must be seen that in the context of selection, scientists and practitioners use constructs, because, for instance, personality cannot be observed directly. Therefore, estimates cannot be excluded. For example, test procedures require many estimation methods already during the development of the test design (parallel test, test retest). Also, determining reliabilities and validities cannot be done without different estimation methods. The estimation ability of test participants also plays a role.

Intra-individual variation in job performance may also result from changes in the individual (e.g., due to motivation, fatigue, changing levels of competence, work engagement, personal or private situation) as well as changes in the job environment (technologies, markets, etc.). In addition, performance on the job can also be influenced by other situational factors such as competent leadership or uncooperative colleagues.

The importance of leadership can be seen in sports, for example. Many examples show that a change of coaches can have the effect that players believe in themselves again and better realize their potential, that teams work together again as a team, and become successful again. Thus, it cannot simply be concluded that poor job performance indicates a poorly designed, implemented, and conducted selection procedure.

Further possible research limitations on the validity of selection procedures may lie in using decision rules. Despite a detailed requirement analysis, the question remains of determining the correct decision rules and cut-off scores for the identified requirement dimensions. For example, suppose the decision rules or algorithm are too narrowly defined, the company may not hire candidates who can think outside the box, use lateral and unconventional thinking approaches, or have creative and colorful personalities.

Companies also cut back on the requirements demanded against the background of the individual labor market situation and change their decision rules, accordingly. In addition, past success behaviors of current job holders do not automatically fit future requirements. Therefore, current decision rules developed by present decision-makers must not automatically work in the future.

To choose the correct cutoff scores, empirically-based decision rules, such as those developed by Montel (2006), with the concept of simultaneous optimization of multiple cutoffs, should be discussed (see Section 3.2.3.3).

A high predictive validity requires high construct validity and high content validity. The predictive or criterion-related validity also depends on the selection and base rate. The selection rate is the proportion of candidates who successfully passed the selection procedure (hired candidates) relative to the number of applicants who applied for the particular job opening. The base rate is the probability of an applicant being successful in the job to be filled without a selection procedure; thus, the base rate is the share of objectively suitable applicants in the total number of applicants ("success without the use of selection procedure"). Also, the lower the job requirements, the higher the base rate. But, organizations can increase the basic rate through excellent pre-selection processes. The higher the base rate (basically appropriate applicants for the job) and the lower the selection rate, the higher the criterion or predictive validity. Thus, using a valid selection procedure is all the more critical, the lower the proportion of suitable candidates among the "unselected" applicants (as the base rate is, then, lower) and the lower the selection rate. The relation between base rate, selection rate, and validity of predictors has further been described by Taylor and Russel. They show that predictive validity changes positively (with a high base rate and a low selection rate) or negatively (with a low base rate and high selection rate).

It would be helpful to know the base rate, but it is challenging to identify a correct base rate, in practice.

Even selection methods with moderate validity (e.g., unstructured interviews) can lead to successful hiring decisions, when the base rate is very high and the selection rate is very low.

Especially in times of a shortage of skilled workers, the question of the availability of suitable applicants and, thus, the topic of the base rate plays a significant role. Therefore, it is the task of companies and politicians to create the conditions for as high a base rate as possible.

These reflections on the base rate show the great importance of a good education system, which usually helps increase the base rate for challenging tasks such as a leadership position. In addition, a high-quality talent acquisition process that generates interest and attracts capable applicants, mobilizing them to maintain their interest in the job also supports achieving a high base rate. Finally, companies need an effective pre-selection process, particularly effective self-selection procedures, to increase the base rate (Deters, 2017, p. 68).

The critical and constructive evaluation of the quality criteria of the psychometric approach shows the limits of this approach. Thus, evidence-based research results can and should be critically questioned, because the results of a personnel selection process need much more interpretation than the psychometric approach suggests.

For correct classification of scientific research results, it should also be considered that scientifically evidenced research results in personnel selection are usually based on a stochastic process. Thus, they provide probability statements but no certainty in individual cases.

However, this does not mean that the psychometric approach should be rejected. On the contrary, although job performance is subject to many interlinked influencing factors, and cause and effect cannot generally be traced back to a single element, rational-analytical procedures in personnel selection represent a recommendable way of making selection decisions. Scientific approaches provide essential information on the design of high-quality personnel selection. Furthermore, a high degree of standardization of the selection process is desirable, to keep the uncertainty of the selection managers as small as possible.

### 3.7.8 Cultural limits of acceptance of analytical procedures

Although the three quality criteria of validity, reliability, and objectivity are renowned and established in the scientific community, they are rooted in a Western way of thinking and epistemology and, therefore, cannot necessarily be regarded as universally accepted. Moreover, cultural differences between, for instance, East Asian and the Western world, can result in different normative standards of thinking and, thus, understanding quality criteria in selection processes. From a psychometric perspective, the Western approach to high quality reflects an analytical approach to science, but its universal validity can be questioned from a holistic thinking approach (Nisbett et al., 2001, p. 291; see Section 7.2.4). Further criticism comes from radical constructivism, which questions the generalizability of the quality criteria with the cognitive construction of the criteria and, therefore, rejects them (Feyerabend, 1976, p. 45).

Some specific personnel selection methods that prove to be accepted in one culture or country may not be applicable in other cultures and may encounter barriers to acceptance. Against this background, it is essential to reflect on the importance of the country's culture for the design and implementation of personnel selection procedures (Anderson & Witvliet, 2008, p. 2). Culture can influence both the acceptance of intuition or rational-analytical selection procedures and, thus, for example, also the acceptance of artificial intelligence in personnel selection. The relationship between culture and the acceptance, design, and use of selection procedures is discussed in more detail in Chapter 7.

### 3.7.9 Social acceptance, fairness, and social validity of selection procedures as possible obstacles to rational-analytic selection procedures

#### 3.7.9.1 Social acceptance and positive relationship building

A selection interview conducted by human beings is characterized by interaction, in which both the candidate and the selection manager evaluate each other. This process is an essential source of information to evaluate the personal relationship and whether one wants to work together in the future (Bauer et al., 1998, p. 892).

Some researchers see the personnel selection process only as an examination to objectively, reliably, and validly select the right person for a specific position. For example, for Kanning (2015, p. 117), a job interview is not a dialogue but an examination situation.

But in today's labor market, most companies can no longer post simple job descriptions online and choose from the countless applications that pour in from qualified talent. Instead, recruiters and hiring managers need to do active sourcing to win the candidates.

The required psychometric approach to selection is, thus, more similar to scientific data collection than to a classic job interview, as it is actually practiced in reality (Koppers, 2013, p. 9). In practice, personnel selection is not only an examination; it is – mainly triggered by environmental changes – also an acquisition process and, therefore, conducted as a dialogue.

A managing director of a small enterprise interviewed in our research says that he gave up developing and using a requirement profile because of the lack of qualified applications. "I manage the lack of personnel. . . . At the moment, we are not getting the applications we need, so we hire a not best-suited candidate and try to develop him. . . . Therefore, it does not make sense for us to base our selection process on a specific requirement profile or job description" (Röbe-Oltmanns, 2020, p. 31).

But even independently of the current labor situation, a recruiter has to build a positive relationship to win applicants for himself and the company. Therefore, recruiting should promote a positive candidate experience and make the applicant's selection process a positive experience.

It is not only the applicants who should feel comfortable and accept a selection procedure but also the selection managers. Many of the hiring managers we interviewed emphasize that it is important to them to build a positive relationship with the applicants. In addition, they say that sympathy/likeability plays a decisive role and could, and should, never wholly be disregarded. Therefore, they reject a fully standardized selection procedure, for example, a fully standardized interview.

On the contrary, the managers emphasize how important it is to work with people for whom they have positive feelings. This is because positive feelings are an essential source of human happiness, motivation, performance, and so on. They,

therefore, want to surround themselves with people they feel comfortable with. That applies just as much to the managers as it does to the applicants.

Recruiting and especially hiring employees is relationship management. HR and line managers participating in the selection process need to tell their stories to candidates; sharing stories with emotional appeal humanizes the organization and creates a personal connection with candidates. Kouzes & Posner (2017) emphasize that leadership is about relationships, and great leaders inspire employees. Thus, "encouraging the heart" of candidates is one of the most critical roles of hiring managers.

Line managers, in particular, see themselves not only in the role of the "selectors" but also as the candidate's potential future supervisor. Research, particularly on transformational leadership and leader-member exchange, shows that an affective identification enables social exchange and, thus, the quality of relationships leaders share with their followers is a key success factor for the performance of both the leader and the follower (Ng, 2017, p. 386). Managers who are open, honest, and authentic in their behavior ensure that candidates open up accordingly and engage in honest social exchange. In this way, the recruiter and candidate get to know each other much better, build up mutual trust and respect, and, based on this, can make a well-founded selection decision.

Thus, the social acceptance of selection procedures plays a central role in developing a positive relationship between the applicant and the hiring manager. Wrong decisions in personnel selection cost money, but so does broken trust and a damaged relationship.

#### 3.7.9.2 Acceptance of selection procedures and positive candidate experience

Often, advocates of standardized selection methods criticize their limited practical application, although a positive trend has emerged in recent years, and an increasing acceptance of standardized methods is observable. Nevertheless, unstructured interviews show high acceptance, with a usage frequency of 33.6% in personnel departments and 51.2% in specialist departments. In addition, a structured recruitment interview by the HR department was assessed as particularly valid by non-users and users (Schuler et al., 2007, pp. 63–64). Therefore, the use of a procedure does not depend only on the attributed prognostic validity. Elsewhere, it can be seen that a strong argument against the use of psychological test procedures is the low face validity of these procedures (Schmidt & Hunter, 1998, p. 265; Deller & Albrecht, 2007; Benit & Söllner, 2013;). Also, research (e.g., Derous & Born, 2005, or Ekuma, 2012) shows that face validity is essential to perceive a selection process as fair and acceptable, from an applicant's point of view. Therefore, for selection procedures to be effective and implemented into practice, they must possess high predictive and face validity. An especially non-transparent test quality, ethnic concerns, and low applicant

acceptance prevent the implementation of standardized and psychometric procedures (Benit & Soellner, 2013, p. 148).

Thus, it is not surprising that Lievens and de Paepe (2004, p. 41) attribute the preference for unstructured interviews to the request that the process should also be sociable, friendly, and informal.

Steiner & Gilliland (2001, p. 127) phrase it as, "interpersonal treatment is largely a function of the interpersonal warmth and sensitivity demonstrated by those administering the selection process."

Schuler et al. (2007, p. 67) also show that in the perspective of companies and hiring managers, the various selection procedures are accepted to varying degrees by applicants. In a study, Kersting (2008, pp. 431–432) states that the assertion that applicants do not accept cognitive ability and achievement tests in Germany does not reflect reality. Applicants' acceptance differs considerably from acceptance by Human Resource managers. For applicants, face validity, in particular, and showing their individual capabilities in the selection process plays a decisive role.

For example, applicant acceptance for unstructured interviews is high in many countries, such as Germany, while it is low for personality tests. The acceptance of selection procedures by applicants must, therefore, be seen against the background of country-specific contexts.

As regards psychometric procedures such as the DIN 33430, research shows that psychometric personnel selection can enhance the employer's image from the applicant's point of view, as applicants are informed about their rights, according to selection standards and the appropriateness of the methods used. One challenge, however, could be that the DIN 33430 requires standardized methods in personnel selection, which restricts the ability of companies to be flexible and present themselves as likable (Klehe, 2008, p. 185). For this reason, both Klehe (2008, p. 186) and Reimann et al. (2009, p. 36) emphasize the importance of providing applicants with comprehensive information about the procedures used and making the selection process as transparent as possible.

Cropanzano and Wright (2003) show that selection procedures with psychometrically high predictive validity, for example, cognitive ability tests, are often perceived by applicants as violating norms of social justice and fairness (see Sections 3.6.5 and 3.7.9); they call this a "justice dilemma." Validity may be of central concern to scientists or personnel managers, but it is only one issue among others, for potential job candidates (Cropanzano & Wright, 2003, p. 24).

From a scientific perspective, a valid cognitive ability test or an extremely formal, fully structured, and standardized interview presents the risk that no pleasant personal contact is established. Also, fully standardized interviews are perceived as impersonal, primarily because the applicant is not addressed individually. Thus, many companies decide to make the application process somewhat unstructured to create a pleasant atmosphere, where the applicant feels comfortable and wants to open up (Weuster 2012, p. 212). And, conducting a semi-structured interview is a good compromise between an

open social exchange, the possibility of responding individually to the applicant, and the commensurate standardization of the selection process.

In analytics, however, there is a demand to reduce social influence through personal relationships, as much as possible; one can get the impression that recruiters should function like robots or data-registering devices. In this way, however, personnel selection cannot be successful. It is essential to act empathetically and authentically. The social skills of the recruiters are decisive in attracting the most suitable candidate to the company and bringing about a positive candidate experience.

In addition, selection processes are always reputation management. No matter how strong the corporate image, the positive employer brand crumbles if candidates' negative feedback about impersonal designed selection procedures is repeatedly raised on social media and indicates, for example, a lousy interview atmosphere.

To ensure a positive candidate experience, the social acceptance and the perceived fairness of a recruiting process are essential. The studies of Chan et al. (1997, 1998) illustrate the dynamic interplay of social acceptance of selection procedures and the perceived face validity, fairness, and motivation of applicants to perform in a selection process. The higher the social acceptance of a selection procedure, the higher the motivation of candidates to perform in a selection process.

As shown in Section 3.7.9, the acceptance and perceived fairness of personnel diagnostic procedures can vary from culture to culture (Bartram, 2004) or from labor market to labor market. Thus, it is necessary to look at what applicants from different cultural backgrounds, education, and so on, expect from a selection procedure (see Chapter 7).

However, it can be assumed that it is essential for all applicants to experience interaction with the potential supervisor and teammates in a selection process, to hear how these people think, or how authentic and appreciative they appear. Applicants want to be convinced and won on these personal levels.

Derous & Witte (2001, p. 319) state that a selection process is not only characterized by the specifications of the psychometric paradigm but also by a so-called negotiation perspective. The negotiation perspective pays attention to the social-emotional processes during selection. "The selection activity is not a one-way 'acquisition' facilitated by the use of (psychometric) tools, but a two-way, professional 'learning situation' in which both applicants and selectors can 'win' through negotiation of mutual expectations" (Derous & Witte (2001, p. 338). This social process perspective should be an integral part of a realistic and effective theory and practice of personnel selection.

#### 3.7.9.3 Perceived fairness of a selection process and the concept of social validity

In the "Model of Applicants' Reactions to Employment Selection Systems," Gilliland (1993, p. 700) published a theoretical approach to describing the relationships between the characteristics of a selection process and perceived fairness. It incorporated existing fairness concepts (e.g., Arvey & Renz, 1992; Arvey & Sacket, 1993;

Schuler, 1993) as well as research findings from the field of Organizational Justice Theory (Greenberg, 1990; Lind & Tyler, 1988). Gilliland's model applies organizational justice in terms of procedural, distributive, and interactional justice to personnel selection (Cropanzano et al., 2007, p. 34). By integrating previous research with his findings, Gilliland (1993) established a basis for subsequent research in this area.

Reactions to selection procedures, especially the perception of fairness and procedural justice (1. formal characteristics such as job relatedness; 2. explanation of procedures and decision-making, for example, feedback and selection information; and 3. interpersonal treatment, for example, social skills of selection managers and two-way communication), influence the ability of organizations to attract and hire highly qualified applicants (Gilliland, 1993, pp. 694–697; Gilliland, 1994; Gilliland & Steiner, 2012).

Applicants unconsciously evaluate these rules of justice in the selection situation. Then, depending on whether they feel upheld or violated, different applicant reactions and implications result, for the company (Gilliland & Steiner, 2012, p. 634; Ployhart & Ryan, 1997; Ployhart & Ryan, 1998, p. 9; Ployhart et al., 1999; Truxillo et al., 2001; Truxillo et al., 2002, p. 1020).

Social validity has been conceptualized in many different ways. Schwartz and Baer (1991, p. 231) state that there are numerous meanings and that we know little about the accurate assessment of what is called social validity. German psychologist, Heinz Schuler, developed one concept of social validity. It attempts to balance power differences between applicants and selection managers, non-transparency, and lack of situational control by applicants. Schuler understands this concept of social validity only as a heuristic and not as a falsifiable theoretical model (Schuler, 1993, p. 12).

Studies on the connection between a selection situation perceived positively by candidates and the use of the parameters of social validity show that compliance with the parameters of social validity leads to improved acceptance of selection procedures (Köchling & Körner, 1996, p. 22).

Schuler (1996, p. 182) distinguishes four aspects of social validity:

1. Information: Information for the applicant: for example, about job requirements, organizational characteristics, or development opportunities.
2. Participation and control: Applicants should be allowed to control their behavior and, thus, the selection situation.
3. Transparency: Information about the course of the diagnostic process, the assessment criteria, the persons involved and their roles, and so on.
4. Communication of the selection decision and feedback: Feedback includes accurate and relevant information that enables the candidate to understand the results of the selection process and how these results are to be used. The feedback should be given in a constructive and supportive manner – it should be formulated in an open, understandable, and considerate way, facilitating insight, integration into the applicant's sense of self, development opportunities, and future decisions.

Making the targeted dimensions, the job requirements, and relevant cues or evaluation criteria transparent to assessment center participants helps provide equal chances for all candidates and reduces uncertainty.

Kleinmann et al. (2011, p. 141) show that it is not transparency by the organization but the candidates' subjective assumptions and cognitions about what the selection procedures measure that accounts for the criterion validity. In particular, the "ability to identify evaluation criteria within selection procedures (i.e., the assessment center, interview, or personality inventories) is an important . . . factor that influences performance in these selection procedures as well as in subsequent performance situations on the job."

A study by Ingold et al. (2015b) shows that assessor ratings in an assessment center with non-transparent dimensions for assessees were more criterion valid than ratings from an assessment center with transparent dimensions. Specifically, if transparency reduces error variance by providing equal opportunities for the performance of all assessees, the prediction of job performance should improve. This study indicates that making dimensions transparent may not seem advisable in an assessment center for selection purposes. Also, the data gives no support for the hypothesis that participants' perceptions of their opportunity to perform are higher with transparency.

However, from the perspective of personnel acquisition and to give applicants a positive candidate experience, transparency can be recommended. In addition, questions of fairness play an essential role in accepting selection procedures. The result of a selection procedure is more likely to be accepted if the selection process is perceived as fair (Gilliland, 1993 and 1994; Steiner & Gilliland, 2001; Ryan & Ployhart, 2000; Hausknecht et al., 2004). If the candidate sees a clear link between the selection procedure and the job requirements, it improves the perception and acceptance of selection procedures.

Personal factors such as personal contact, according to Hausknecht's findings, play only a minor role in the perception of fairness of the selection process (Hausknecht et al., 2004, pp. 654 and 669).

However, it must be critically noted that individual studies listed in the meta-analysis cover only small samples and refer mainly to hypothetical situations, rather than to real selection processes, and the time of measurement was not considered as an influencing variable. Due to the experimental character of the study, there is a risk of lack of transferability to practical contexts. In addition, the meta-analysis only covers primary studies published up to 2003, and a follow-up study is needed to reflect the current state of science and practice (Lindemann, 2020, p. 21). This is necessary because recent studies on the acceptance of AI in personnel selection procedures show how important personal contact and personal interviews are, to applicants (Fellner, 2019, p. 12).

### 3.7.10 Limits of practicability

In practice, massive deficiencies in implementing rational-analytical procedures have been identified (Sarges, 2013, pp. 819–820). A significant reason is seen in the fact that, apart from limited flexibility and the associated bureaucracy, rational-analytical procedures are considered to be less practicable. Practicability comprises the time or financial effort required to carry out selection procedures. For example, suppose specific jobs are filled only relatively rarely. In that case, the needed time and money for a standardized process with requirement analysis, developing an interview guideline, behavioral anchors, and so on, are often perceived as too costly, especially for jobs that are not so pivotal from a business perspective (see Section 2.2).

Moreover, to still meet the requirements of psychometrics, selection procedures often only rudimentarily meet the scientifically desired standards. For example, many selection procedures such as assessment centers fall far short of psychometric standards, but practitioners believe they meet them. However, if selection procedures meet at least some psychometric requirements, the goal of a well-founded personnel selection may be achieved to a certain degree.

### 3.7.11 Limits of meaningfulness of certificates, references, or school grades

In principle, school, college, or university grades are "valid" measurements of specific abilities. However, in contrast to a test result, these assessments are not based on a flashlight finding but on observations, examinations, and evaluations over an extended period. For this reason, a school grade in mathematics, for example, is usually a relatively valid predictor of vocational or at least vocational training success. Research also shows that specific high-school grades are a relatively good predictor of academic success in certain subjects, such as medicine (Baron-Boldt,1989). Nevertheless, if average final grades of "A" (excellent) are given at specific schools and universities or in particular subjects of study, it is still difficult to classify these grades and compare candidates correctly. Hiring managers should, thus, always pay attention to how someone scored compared to their classmates or fellow students.

However, whether schools or study grades are good predictors of later success at work or as a (global) manager remains questionable.

Furthermore, nearly every country, indeed almost every teacher, school, university, and so on – despite numerous attempts to improve comparability – has different standards for evaluating performance. As a result, the performance levels of university classes or cohorts can be very different. Also, graduates from highly respected universities are often considered more suitable per se than graduates from other universities, although there are very suitable candidates at almost every university.

That's why final grades, school and university certificates, or even (job) references have only very limited significance. To measure all applicants with the same standard, be more objective, and give all applicants the same chances, tests, for example, online cognitive ability tests (GMAT), can select students, apprentices, talents, and so on. Potential candidates with poor grades, who would, otherwise, have had no chance may also be identified. Since a positive correlation between career success and, for example, specific results in a cognitive performance test or also in personality tests could be shown in various studies (e.g., Almlund et al., 2011),, companies are recommended not to be satisfied with the evaluation of school or university certificates, etc., and consider the use of test procedures for the selection of specific employee groups such as talents.

The limits of informative value show that although selection procedures are carried out in a rational-analytical manner, specific evaluated data and supposedly objective and valid information collected from applicants should be seen critically and constructively questioned.

### 3.7.12 Conclusion

Even if personnel managers assume use of scientific selection procedures, concrete design and implementation methods may not necessarily meet scientific quality criteria.

Moreover, candidates' performance and professional success depend not only on a psychometrically well-done selection procedure but also on the organizational context.

Rational-analytical selection procedures are not automatically accurate and valid, and judgment errors can also occur in these procedures (Kruglanski & Gigerenzer, 2011; Koppers, 2013, p. 60).

Therefore, innovations in the design and implementation of selection methods are necessary to improve effectiveness of selection procedures and match human capabilities, context-specific requirements, and organizational resources. Nevertheless, the aim remains to implement high-quality selection procedures.