INTUITIVER UND RATIONALER KOGNITIVER STIL BEI DER PERSONALAUSWAHL

Experimentelle Untersuchungen zu

kognitiven Stilen bei der Personalauswahl

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ABSTRACT

INTUITIVE AND RATIONAL COGNITIVE STYLES IN THE PERSONNELS SELECTION

Personnel selection has been criticised by scientific researchers for its intuitive interpersonal perception (e.g. Guion, 1998, Obermann, 2002 etc.). Despite extensive scientific research in organizational setting (Mell, 1988; Schuler, 2001 etc.), Human Resource practitioners attribute their successful decisions to intuition (Nowicki & Rosse, 2002). In the Studies 1 to 4, personnel decisions made by the participants with different cognitive styles were tested. Participants were asked to select the best candidate based on his resume and recommendations (Study 1). The candidates had to be evaluated after the structured interview (Study 2) or after the group discussion during the Assessment Center (Study 4). Participants also had the possibility to decide using the scores of the candidates achieved during the Assessment Center (Study 3). The results of the first four studies revealed that the intuitive cognitive style was very successful in situations when working with information (e.g. scores, resumes). This finding supports opinions of the organizational practitioners (Agor, 1989 etc.). At the same time, intuitive interpersonal judgment (e.g. observation) was significantly worse than rational. This finding supports the recommendations of organizational psychologists to use standardized methods (e.g. personality tests and structured interviews). One explanation of these findings is that intuitive participants have a higher confirmation-bias than rational participants, which was found to influence negatively successful decision making (e.g. Kray & Galinski, 2003). Intuitive participants showed higher confirmation bias than rational participants, especially in the step-by-step procedure. Rational participants were interested in the controversial information, but not when asked to decide spontaneously.

Alternative explanation of these considers the learning style preferences of the intuitive and rational participants. Rational participants tend to use Realistic Observation, which

might explain their good observer qualities. Intuitive participants tend to use Active Experimentation and might handle data with ease, in comparison to the rational participants. Studies 3 and 4 continued investigation on the intuitive and rational decision making in different stages of the personnel selection. Intuitive decision makers were found to be better when handling with big amounts of partially missing, irrelevant information or handling scores of the standardized procedures. They also had higher preferences for cognitive bias and selecting the recommendations supporting their opinion then opposite to it. This could be explained by their learning style preferences – active and pragmatic. Looking for new things and implementing findings. Rational decision makers were more theoretical and looking for controversial information, except for the situations when under stress or forced to make a decision. In this case, similar to the intuitive participants, they also tend to search for consistent information.

In the Study 5, we have measured the performance evaluation of groups with rational and intuitive cognitive styles, as well as heterogeneous groups. The findings supported the results of the previous studies (e.g. Armstrong & Priola, 2001) that intuitive groups are more successful when working in the natural conditions. Intuitive members come along with each other and don't report difficulties even when working in the virtual environment. Heterogeneous groups reported no difficulties in the mutual work or communication with each other.

In sum, we have studied the influence of the intuitive and rational style on the personnel decisions made when using different personnel selection methods (application screening, employment interview, Assessment Center, recommendations). We have also studied the mutual work of the participants with different cognitive styles.

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CHAPTER 1

PROBLEM AND OVERVIEW

Intuition has been a subject of investigation for centuries. Substantial amount of philosophical literature and some recent studies in the experiential and cognitive psychology are dealing with the concept of intuition (Osbeck, 1999). The current interest in intuition is practical, coming from the organizational practitioners and receiving more and more response from the scientists. The philosophical tradition of intuition is more consistent in the concept definition of intuitive thinking than psychology. The definition of intuition is similar to "seeing" and understanding, the "immediate proposition", as "one to which there is no other prior" (Aristotle, Post. Anal. 72a 7-9, cited by Osbeck, 1999). Intuition was studied by rationalists (Plato, Aristotle, Descartes), who understood intuition as a basis for reasoning processes and not contrasted to it. In medieval times (e.g. Ockham, Sentences), intuition was viewed as "…an apprehension of a thing, its qualities, and its relations to other things through an intellectual event that is concurrent with sensation and gives rise to contingently true propositions concerning the objects sensed" (cited by Osbeck, 1999, p. 235). Modern philosophers apprehend intuitions as "…elements or constituents of our knowledge and the knowledge of which they are elements is propositional knowledge" (Smyth, 1978). The epistemological concept of intuition includes such traits as "immediate apprehension, where immediate is understood in terms of absence: of inference, justification, mediation, or grounds" (Osbeck, 1999, p. 234), being a part of rational activity, on preconscious and conscious levels. Despite the older comprehension of intuition as opposite to the rational approach, the philosophical view of intuition is similar to the psychological understanding of intuition as a cognitive function. Despite the quite short history of intuition in psychology compared to philosophical traditions, psychological notions are much more varied than philosophical concepts. This Chapter provides a brief overview of different concepts of intuition in psychology and describes the chosen concept for the empirical investigation.

Cognitive and experiential psychology has avoided the notion of intuition as a topic of inquiry for quite a long time (e.g. Claxton, 1998). In recent years, some research was occurred in this area, but the absence of a unique concept (Osbeck, 1999) makes the research in this field quite complicated. Moreover, few instruments have been developed to measure intuitive thought. It seems to be easier to define what is not intuition than what is intuition. *Figure 1* presents the conceptual differentiation between intuition and other concepts.

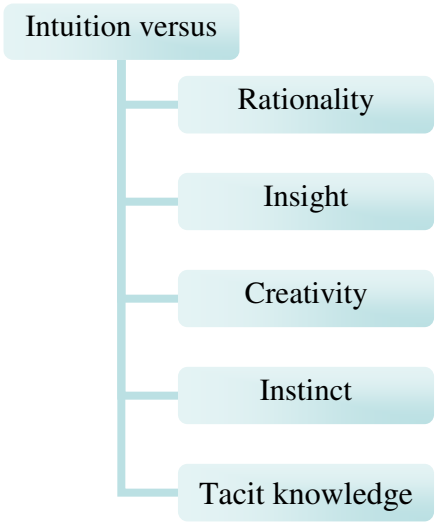


Figure 1. Conceptual differentiation of intuition

1. Intuition ≠ Rationality. Unlike the fundamental philosophical understanding of the intuitive thought as a basic for rationality, psychologists strictly differentiate these notions. Bruner (1960) contradicts the intuitive process to the rational one, as long as: "… analytic thinking characteristically proceeds a step at a time. Steps are explicit and usually can be adequately reported by the thinker to another individual" (p. 57). This makes it unlikely, that an intuitive thinker finds a correct solution unconsciously and has difficulties for explaining how the answer was fount. Erroneous reasoning process cannot be intuitive as long as intuition is a complex interaction of thinking processes, implying that there is some pattern, structure, or organization that exists prior to its detection (Bowers et al, 1995). Fischbein (1975) finds intuition being intrinsic to reasoning, happening in the moment of transition from the first cognitive step of "I know what I am looking for", and the second cognitive stage of "I know what to do". Quite a few researchers consider intuition to include reasoning (Baylor, 1997; Kuhl, 1983). Others, like Hammond write about a "rivalry" between intuition and analysis "for the right to claim the virtue of superior cognitive performance" (1996, p. 92). Hammond also mentions that the future of intuition in psychology may be quite positive due to its importance for creative and speculative tasks, as well as negative due to its potential for error. These findings made important practical implications, as long as unaided human judgment was determined, in some cases, to be inferior to statistically derived decisions (Grove & Meehl, 1996; Kleinmuntz, 1990).

2. Intuition ≠ Insight. Lieberman (2000) mentions the necessity of a clear distinction between intuition and insight. When people speak of their intuition, quite often they mean insight. Psychologists are also likely to compare intuitive apprehension and insight, as long as insight also fails to follow this step-by-step rational process. Immediacy of insight and its unconscious nature makes it very similar to intuition. Shooler & Melcher (1994) differentiate between intuition and insight: "… awareness derived in insight, it is not a judgment, as is usually the case in intuition. Rather, insight is a process where one suddenly becomes aware of

the logical relations between a problem and answer" (p. 110). Definitions of intuition stressing the similarity with insight processes are, for example from Bouthilet (1948; cited by Osbeck, 1999), when intuition is understood as "the capacity to make correct guesses without knowing why" (p. 47). Bowers, Farvolden & Mermigis (1995) also consider the cognitive processes in insight as being more continuous than the appearance of sudden insight implies. Khatri and Ng (2000) define intuition as the "smooth automatic performance of learned behavior sequences and often can short-circuit a step-wise decision-making, thus allowing an individual to know almost instantly what the best course of action is" (pp. 60–61). In the conceptual intuition scheme made by Baylor (1997), insight is presented as a component of intuition, where intuition is mediated by reason. These contradictions of insight and intuition have a more theoretical than practical relevance, two aspects could be investigated (e.g. behavioral and level of expertise).

3. Intuition ≠ Creativity. Although both intuition and creativity seem to create something from nothing, creativity cannot be compared neither to instinct nor to reasoning. Highly intuitive people could speak to their intuition inducing an altered state of consciousness (e.g., meditative) (Sowerby, 2001). Intuitive state is thought to give rise to creativity (Jung, 1923). This study we does not include creativity as a research topic, but considers it important to differentiate the conceptual notions.

4. Intuition ≠ Instinct. The fundamental understanding of intuition as a trait (Jung, 1923), considers that our intuition is inherited, with some people being more intuitive, some people less, and some possessing extraordinary intuitive abilities. Instinct is more an action than a thought, even considering the affective component. Some authors consider intuitions as behaviorally oriented, depending on previous experience, and tending to fulfil, correctly or incorrectly, some adaptive requirements (Fischbein, 1987), which also makes it look like instinct. At the same time, others consider it to have a more integrative function, synthesizing knowledge, intelligence and experience (e.g. Glaser, 1995).

5. Intuition ≠ Implicit Learning. A substantial amount of research considers intuition similar to implicit learning. "Implicit learning" is learning from experience without awareness of doing so (Reber, 1967). Similarity of intuition to implicit learning (e.g. Reber, 1989; Lieberman, 2000) is consistent with the fundamental philosophical visions on intuition. In this approach, intuition is understood as "an unconscious process" (Reber, 1989, p. 219)… "a cognitive state that emerges under specifiable conditions", enabling one "to engage in particular classes of action" (p. 233). This approach has been supported by the neuropsychological findings. The findings consider "basal ganglia" being of central importance for both intuition and implicit learning, where "…basal ganglia are centrally involved in nonconscious predictive sequencing in both the motor and cognitive domains" (Lieberman, 2000, p. 120)." Although these studies failed to equate implicit learning and intuition, it was demonstrated that "…both social intuition and implicit learning rely on the integrity of the basal ganglia…", it is concluded that social intuition operates by way of implicit learning. (p. 127).

Many authors base their definitions on this approach of equality between the intuition and implicit learning (e.g. McDougall, 1923; Bowers et al., 1990). Baylor (1997) considers sensing relationship as a very important but still just a part of intuition, together with immediacy and reasoning. The component of sensing relationships reflects the formulation of connections, based upon a person's knowledge structures and reflecting level of expertise of the person. Baylor (2001) differentiates between mature and immature intuition, where mature intuition is the "intuitive seeing" using existing knowledge structures, and immature intuition might serve as a precursor for analytical understanding.

Many different properties are ascribed to intuition, for example, sudden appearance, emotional involvement, preconscious process, contrast with logical thought, understanding by feeling, associations with creativity, instinctive knowledge and a subjective certainty of correctness (Bastick, 1982). Different types of intuition are also described, for instance, discovery, creative, evaluation, operative, prediction, and illumination (e.g. Goldberg, 1989).

Intuition as a Trait

Personal differences in intuitiveness mentioned by McDougall, were developed by Jung (1923). Jung divided people into 4 types: Thinking, Feeling, Sensation, and Intuition. Intuition considers experience which is immediately given to consciousness rather than arising through mental activity (e.g. thinking or feeling), but without physical cause. It is the source of inspiration, creativity, novel ideas, etc. According to Jung, the Intuitive type jumps from an image, shows interest for some brief period, but soon loses interest. Jung's theory has served as a basis to a variety of different scales actively used for counselling purposes (e.g. Myers-Briggs-Type Indicator; MBTI). Human Resource practitioners have been found to be very intuitive (Agor, 1991). The goal of this study is to compare effectiveness of different decision making processes in personnel selection, and this study regards intuition as a process and not as a personality trait.

Intuition as a Cognitive Process

The model of cognition applied by this study differentiates between the intuitive and rational cognitive styles, where "one identified by terms such as rational, analytical, deliberative, propositional, and extensional and other by terms such as experiential, automatic, intuitive, narrative, and natural" (Denes-Raj & Epstein, 1994, p. 819), is Cognitive Estimate Self Theory (CEST; Epstein, 1994). The working definition of intuition is "a preconscious system that automatically assimilates reality and directs behavior" (Epstein et al., 1996). The main assumption in CEST is that behavior is a joint function of both modes of processing, independently and in an interactive manner. Thinking styles are found to interact in such domains as coping (Epstein et al., 1996), irrational thinking (Wolfradt et al., 1999), and framing effects, and do not interact with regard to heuristic responses. Intuition is considered to be in the right hemisphere. Epstein (1994) has proposed that our experiential self, opposite to a rational one, comes in force under stress, when people are being influenced by their previous experiences. Rational people tend to have a self-picture of being emotionally well-adjusted,

having self-control and responsible, while experiential (intuitive) people are likely to describe themselves as good communicator, tolerant, trusting, spontaneous, and open-minded (Pacini & Epstein, 1999).

Rational-Experiential Inventory (REI) was developed by the authors of the CEST to quantify individual preference for intuition, and rationality. It consists of two scales, like Faith in Intuition (FI) and Need for Cognition (NC) and is known to have high test-retest reliability (Keller et al., 2000). In this study, REI is used to measure cognitive styles.

Other instruments measuring intuition are known as well, for example Miller Intuitiveness Instrument (MII; Miller, 1995) designed to measure the self-perception of intuitiveness (SPI) of practising nurses. Another instrument, Riding 's Cognitive Styles Analysis (CSA) has also two scales: wholist-analytic and verbaliser-imager was found to have quite low reliability (Rezaei & Katz, 2004). Tests measuring intuition as a trait such as, Myers-Briggs-Type Indicator (MBTI), to measure intuition are extremely popular.

Effectiveness of the Intuitive and Rational Cognitive Styles

It is not surprising that such differentiated understanding of intuition, brings different findings regarding the decision effectiveness. For example, Hammond et al. found support for the superiority of intuitive functioning in some areas (Hammond, Hamm, Grassia, & Pearson, 1987). Accuracy was related to the degree of correspondence between the type of task and the type of the cognitive activity. Some authors consider performance to be better when cognitive properties correspond to task properties (Friedman et al., 1995). In some studies, rationality was found to be much better than intuition (Shiloh & Stenhav, 2004; Priola et al., 2004). In others, intuitives performed better (Noddings & Shore, 1984; Armstrong & Priola, 2001). For example, intuitive thinkers made unusual decisions and used creative methods (Agor, 1989). Both intuitive and analytic processes do have different kinds of errors producing unreliability, whereby analytical cognition is more likely than intuitive cognition to produce extreme errors. (Hammond, et al., 1987). A combination of intuitive and analytical modes (Hatsopoulos &

Hatsopoulos, 1999; Nutt, 1989; Yaniv & Hogarth, 1993) has been recommended as well. Mechanical prediction outperformed human intuition when based on the same information, but a combined approach was best when judges had access to relevant information not captured by the model (information asymmetry) (Whitecotton & Sanders, 1998).

Decision makers have been found to perform poorly when multiple sources of information were supposed to be combine into a global judgment. Intuitive decision making is preferred when making private consumer decisions, and less for expert jugdments (see Sjörberg, 2003). Experts and managers also tend to use intuitive decision strategies almost exclusively under high stress conditions (Kaempf, Klein, Thordsen, & Wolf, 1996). In sum, decision analysts prefer analytical approaches to decision making, while practitioners in many fields persist in the belief that intuitive decisions are superior (e.g. Kuo, 1998).

The current program of this research examines the effectiveness of intuitive and rational decision making in different stages of personnel selection. It is hypothesized that the combination of both styles can bring improvement to the decision making effectiveness.

Intuitive Decision in the Personnel Selection

Global, widespread, and diverse forces impact today's economies and marketplaces, with important implications for personnel selection (Dunnette, 1997, Howard et al., 1996; Ilgen & Pulakos, 1999; Kraut & Korman ,1999; Pearlman & Barney, 1999, Schmitt & Chan, 1998). Job performance constitutes all measurable work behaviors relevant to organizational goals and within the individual's control (Campbell et al, 1996). Despite the strategic importance of the correct placement for the future success of organizations, there seems to be a growing distance between the scientific findings and the practical implementations of these findings (Dunnette, 1990).

Scientists stress the importance of using cognitive tests and structured interviews for the purposes of personnel decision making, as well as personality tests, due to their high validity and objectivity (e.g. Hunter, 1986; Barrick & Mount, 1991). The opinion of the practi-

tioners differs from the scientific approach. For example, Liebling (1956) considers tests and questionnaires used for diagnostics superficial and considers intuition to be important to understand another person. This opinion is still supported by quite a few managers attributing their hiring successes primarily to luck and intuition (Nowicki & Rosse, 2002) and suggests using the least valid selection tools available to them (Cropanzano et al., 1993). The negative attitude toward standardized methods is increased by the organisational pressure (Klehe, 2004). Furthermore, when using standardized procedures and methods, still at least 20% is left for irrationality (Zehnder, 1986). Other studies, consider it to be even greater (up to 40%) (Kinicki & Lockwood, 1985).

Some more figures: only 35% of the American companies are likely to use structured interviews and 28% use cognitive tests (Sanchez, 1994). In Germany, where this investigation was carried out, the situation is even worse (Litzcke, 2003). Psychological tests for personnel selection of top managers were used in less than 10% of cases, opposite to the United Kingdom (70%) (Bungard, 2000). Standardized interviews are known to have at least double as high validity than unstructured interviews. It might be explained through very early decision making and impression management of the candidates. People gather impressions about each other in the first seconds when meeting each other (Schmid, Hipp & Caspari, 1999). Image, concrete behavior and personality are saved in our brain as traits being a conclusion of monitoring behavior (Fiske & Taylor, 1991). Mistakes in interpersonal judgments made privately do not usually have dramatic consequences, but result in a very expensive Personnel Selection. Such mistakes in interpersonal judgments as Hello Effects, Expectancy Effects etc. are described in the scientific literature (e.g. Kanning, 1999). For example, your hand shaking determines your chances of selection.

Recruitment starts with screening application materials. More than 80% of German companies stated to use application documents for external personnel selection (Schuler, 2001). Recruiters focus their attention first on the application documents perceived as rele-

vant to the job, such as educational achievements and reported skills or hobbies. In reality, evaluation of application forms is more spontaneous than systematic (Mell, 1988). In addition to gathering factual data, recruiters apparently make inferences from resume information regarding subjective applicant attributes, such as personality (Kirkwood & Ralston, 1999), and use these inferences in determining initial employability (Brown & Campion, 1994; Dindoff, 1999). Despite the fact that such conclusions are not always consistent or legal, it is generally accepted that recruiters frequently form impressions from resume data that go far beyond the education, work experience, and activity reported on applicants' resumes (Cable & Gilovich, 1998). Study 1 investigate the effectiveness of intuitive and rational decision making when screening applicants' resumes.

Employment interview is also very popular in the Recruitment and Selection practice. Study 2 tests the effectiveness of the intuitive and rational interpersonal judgments during the employment interview. The "essential character" of the interview is being understood as "dynamic interaction between two people" (Yonge, 1956, p. 27), and this might be the reason why unstructured interviews among practitioners. Interviewers may prefer the freedom of unstructured interviews in order to communicate the organization's values, and qualitatively assess candidate fit (Macan & Dipboye, 1994). However, the use of prompts and follow-up questions is a primary means by which interviewers might bias information gathering (Macan & Dipboye, 1994). Study 3 and 4, described in the Chapter 3, continue the research and investigate information processing when handling the results of the standardized methods, taking recommendations or observing participants in the group discussions.

Professional judgment is expected to be based on conscious differentiation between the observation of the concrete behavior and the generalization of the personality traits of the person being observed (Kanning, 1999). Intuitive judgment is "reached by an informal and unstructured mode of reasoning, without the use of analytic methods or deliberate calculation"

(Kahneman and Tversky, 1996, p. 124). According to these definitions, Human Resource practitioners may not be intuitive because it is unprofessional.

Yet where are the mistakes of the interpersonal judgments hidden? Trope (1986) has argued that people perception has two major components: behavioral identification and attributional inference (p. 733). When we gather information about the other person, we are likely to receive it visually and much less acoustically (Rosenthal, Hall, DiMatteo, Rogers, & Archer, 1979). It explains, why attractive candidates are preferred over the less attractive ones (Schuler, 2001). Other findings consider that even very brief, such as one-minute or even shorter, presentation produce consensual and mildly valid inferences (Albright, Kenny & Malloy, 1988).

Not only observation, but also attributional inferences can be a source of error in the interpersonal judgment. Verbal and nonverbal clues affect the conclusions about personality traits and influence the final decisions. When a person seems to look confident or dominant, silence is interpreted as expressing power, or in the opposite way, as long as the person looked shy. Empirical studies tested the influence of just one information on general evaluation made about a person (like glasses or no-glasses) (e.g. Thornton, 1943; Asch, 1946). These evaluations have direct influence on the selection decisions made. For example, Cole, Feild, Giles & Harris (2004) have found that Conscientiousness correlated with the employability ratings for Conventional jobs (e.g., accounting), while Extraversion was most associated with employability ratings for Enterprising jobs (e.g., marketing). However, beyond Dunn, Mount, Barrick, and Ones' (1995) study that reported managers' perceptions of hypothetical applicants' personality traits as important constructs in evaluating their employability, there are few studies that have assessed the relationship between recruiters' inferences of applicant personality traits with their assessments of applicants' employability (Wayne, 1998).

Organisational practitioners understand the importance of further training of the diagnostic qualities and intuition (Agor, 1989). The need for further research of the intuitive deci-

sion making in the personnel selection was also recognized by the organizational psychologists (Morris, 1991; Kriz, Loth, Hesse & Hargen, 2001). Intuition is especially important at situations with high levels of uncertainty, no previous experience, under time pressure and with information shortages (Agor, 1989). Other authors advise rationality for making decisions in stressful situations (Lazar, 1999).

The importance of cognitive styles in the personnel selection has two sides. On one side, the cognitive style of Human Resource practitioners plays a role in the decision making. On the other side, the cognitive style of the future employees needs to be taken into account as well. In this case, opinions differ not only between scientists and practitioners, but also among the researchers. Highly intuitive managers performed significantly better on making strategic decisions than people with low level of intuition (Cosier & Aplin, 1982) and intuitive team members were more likely to be selected as group leaders (Armstrong & Priola, 2001). Other studies have found rational participants to be much more effective than intuitive (e.g. Priola et al., 2004), and authors explain this performance difference as being due to the different environments (organic versus mechanic). This hypothesis has been supported by other research. For instance, in high-tech environments, sales growth rates were found to be higher when the technocracy dimension of decision making style structure were negatively related, the opposite valid for the low-tech environments (Covin, Slevin & Heeley, 2001). This current program of research has conducted studies both in the mechanic and organic environments. Chapters 2 and 3 describe the studies conducted in the laboratory setting. Chapter 4 deals with the performance of different intuitive, rational and heterogeneous learning teams in the natural or organic setting.

Conclusion

Ubel & Lowenstein (1997) stress “the relative importance of intuition and systematicity”, in order to find out in what situation intuitive decision making is superior (p. 647). Study 1 to 4 report the results of experiments made in order to find out, which of the cognitive styles (Intuitive or Rational) should be used in the personnel selection. Study 1 tests the quality of such decisions when screening applications. Intuitive, spontaneous and rational, systematic ways of studying application materials were compared. In the Study 2, Ss were supposed to evaluate video interviews of applicants. Study 3 has studied the way, intuitive and rational Ss were dealing with the test scores of different applicants. Study 4 included a video with a group discussion made during the Assessment Center. Team performance of the homogeneous intuitive, rational and heterogeneous groups are described in the Study 5. Differences in the information selection and information processing of intuitive and rational individuals were studied as well. To sum up, this dissertation aims to research intuitive decision making in the personnel selection when using different information selection methods.

CHAPTER 2

COMPARISON OF RATIONAL AND INTUITIVE COGNITIVE STYLES IN SCREENING APPLICATONS AND INTERVIEWING CANDIDATES

Prior research has yielded considerable evidence of standardized methods as having higher validity in personnel selection processes. As mentioned in Chapter 1, intuitive decision making in the personnel selection process is calling for more differentiated research (Morris, 1991; Kriz, Loth, Hesse & Hargen, 2001).

The present studies tested whether intuition was helpful in the most popular stages of personnel selection, such as screening of application materials and during the employment interview. Study 1 tested the hypothesis if intuition is helpful when dealing with acceding amounts of information (e.g. application maps), which is proposed by organizational practitioners (Agor, 1989 etc.). We also examine the combination of intuitive and rational styles. Study 2 focused on the interpersonal judgments during the employment interview. Results revealed that intuition was quite helpful in situations when abundant amounts of information were supposed to be evaluated, as in the case of application screening. In the cases of employment interviews, the opposite was valid – intuition was found to be less effective than rationality. Intuitive participants failed to make correct judgments about the people they liked.

INTRODUCTION

The goal of the personnel selection practitioners' was to develop selection instruments useful for predicting candidates' future performance. Of much less importance were the questions examining the reason why selection instruments work and what it is that they exactly measured (Lievens et al., 2002). Personnel selection has also been criticised for its intuitive character. This intuitive character could be explained by the fact that personnel managers are found to be intuitive (Agor, 1989). It is expected that a professional judgment is based on conscious differentiation between the observation of the concrete behavior and the generalization of the personality traits of the person being observed (Kanning, 1999). Selection instruments are selected on preference and cost factors, empirical evidence of their utility is usually ignored (e.g. Guion, 1998). This dissertation will focus on the combination of the intuitive and rational cognitive styles with intuitive or rational methods in different personnel selection tasks in order to determine whether rationality, intuition or their combination is better for the personnel selection purposes.

Intuitive and Rational Cognitive Styles

In order to define rational and intuitive types, the personality dimension specified in the Cognitive Experiential Self Theory (CEST; Epstein, 1994 and Epstein et al., 1996) was used. According to CEST, people process information in two parallel interacting systems, rational and experiential (intuitive). The, rational mode is deliberative and analytic, primarily verbal, conscious, and functions via a person's understanding of the conventional rules of logic, and the rational style is slow, and suited for dispassionate analysis. Contrary to this, the experiential mode is intuitive, automatic, rapid, associative, and holistic, representing events in the form of concrete exemplars rather than abstract symbols. The experiential style is shaped by emotionally significant past experience, and is outcome- rather than process-oriented, suited to rapid assessment of information and decisive action. The two systems are found to operate synchronically in parallel and interact with each other. The findings of sev-

eral studies provided qualitative and quantitative support for the independent existence of the experiential and rational systems (e.g., Denes-Raj & Epstein, 1994; Epstein, Pacini, Denes-Raj, & Heier, 1996; Kirkpatrick & Epstein, 1992). Rational processing was associated with normative judgments, constructive, action-oriented coping and academic achievements. Intuitive processing was associated with heuristic judgments, affectively positive, although naive and unrealistic thinking patterns (Epstein et al., 1996; Shiloh, Salton, & Sharabi, 2002).

Application Screening

The personnel selection process starts with screening of application forms or resumes, and it is one of the methods most widely used for selection purposes. The idea that past behavior is the best predictor of future performance makes human resource managers decide if the applicant is going to be a good worker or not. Applications usually consist of background information, such as personal data, education, working experience and hobbies. Different countries have different standards for job applications. For instance, in Germany (where this study was carried out), a very detailed description of your person is expected. The resume includes photo, age, gender, family status, detailed description of your work experience and recommendations from every working place. In other countries you are obliged to make a statement about your physical health. American resumes seem to be the most anonymous – no age, no gender, no photo, and no longer than two pages. Two sources of error are typical for the application screening: selection of non-optimal candidates and the rejection of highly qualified candidates. The costs for mistakenly placed candidate are thought to be higher than for denied qualified candidates, despite the fact that most application screening decisions are negative. In praxis, decisions on applications are made more intuitively than systematically (Mell, 1988). Negative decisions were made mostly based on the formal aspects of a resume applied, as long as positive decisions were done due to the content of the previous experience. Study 1 compares the decision effectiveness made by intuitive and rational participants.

People have beliefs about personalities of the other people based on one or more observable characteristics, which lead to the conclusion about other, non-observable, traits. This process was described by Cronbach (1955) as implicit personality theories, and this phenomena can be found in the experiments of Asch (1946) etc.. The best chance to gather information about the candidate is during the employment interview. An interview is usually the second step in the personnel selection process. The potential employer has a chance to ask the future employee about his motivation and professional background, but also the candidate does have a possibility to learn more about the company. The candidate has the opportunity to see the possible future working place, and the Human Resource Manager may use sensing channels to gather verbal and non-verbal information about the candidate. Doing so, it is not only possible to "read from face", but also to "read into face" of the potential employee (Gilbert, Pelham & Krull, 1988). The traits which are read from the targets' faces changed the interpretation of the verbal statement. For example, a confident candidate was judged as powerful, even when keeping silent. The opposite was valid for unconfident or shy person. This problem might be the case of quite a few experts and less for the sales persons. Other mistakes in the interpersonal perception are known as "Hello Effect", "Sequence Effect" and others are described by researchers. Examples for Hello effects: attractive people are described in a better way than unattractive ones (Dion, Berscheid & Walster, 1972), or people with glasses are considered to be more intelligent, etc. These conclusions have a direct impact on selection decisions. Attractive people have higher chances of being selected (Marlowe, Schneider & Nelson, 1996). Sequence effect comes in force when a row and time of candidate presentation plays an important role in their evaluation. The impressions gathered about the candidates tend to resist despite of the performance decline (see Jones et al., 1968). The same is valid also for such stable personality traits like intelligence, where behavioral changes are sub-

scribed to such situational conditions as “luck” or “circumstance” (Obermann, 2002). These and other mistakes, mentioned above, are especially valid when non-standardized, unstructured interviews are applied. The preference of human resource managers for unstructured interviews was described in Chapter 1. To sum-up, structured employment interviews define content more explicitly, have higher validity (0.56) and interrater reliability (0.67) in comparison to the unstructured interviews (reliability of 0.34), being still widely preferred by organizations (Graves & Karren, 1996). Unstructured interviews are not only less valid, but also legally indefensible in numerous countries (McDaniel, Whetzel, Schmidt & Maurer, 1994). In Study 2 structured interviews were applied to increase the validity of the interpersonal evaluations. Attribution processes, or the way we attribute the behavior of others to the traits of the person, fail to take the situational factors into account. A specific example from the current context of personnel selection, is the nervousness that often occurs during an interview. Depending on how often a particular behavior is observed or how often it was earlier performed, the behavior is often subscribed to the person, situation or other factors. When perceiving others, it is important to assess whether the particular behavior was caused by the participant in order to be noticed, or rather could it be explained by the circumstances of the situation (Orvis et al., 1975). Selection interview takes, as a rule, one hour, which seems to be not that long to make long-term conclusions about the other person’s future performance. In a study by McArthur & Post (1977), the tendency for a stronger attribution of behavior to personality traits was especially found for more noticeable (attractive) people than for less noticeable. Another factor, which does have an influence on the personality judgment, is sympathy, and is based on the perception of similarity. Similarity was found to lead to positive performance appraisal (Obermann, 2002). Prejudice is another source of error, occurring when assimilative processes dominate, and all members of a given class of objects or people are regarded as functionally equivalent (Zimbardo & Leippe, 1991), and there is a refusal to accommodate (to) variations. Festinger (1957) describes a similar process in his Cognitive Dissonance The-

ory: if beliefs are held sufficiently strongly, people may go through remarkable psychological contortions in order to assimilate new information to the existing beliefs, rather than accommodating the beliefs to the information.

Present Research

The main question of the present research is the effectiveness of intuitive and rational decision making in different stages of the personnel selection. During, for example, screening applications (Study 1) or during employment interviews (Study 2). Employment interviews, along with application screening are the most widely used methods in personnel selection (Schuler et al., 1993). Is intuition just a short-termed possibility to cut the costs and save time needed for more detailed evaluation? The goal of this research is not to determine why human resource managers use less valid methods than recommended, but rather to find out if the combination of intuitive and rational cognitive styles improves the quality of judgment. It is also our goal to determine if a personal cognitive styles influence decision making. Can "rational" people make intuitive decisions, and can "intuitive" people make rational decisions? A further area of focus (Study 2) are intuitive and rational methods of interpersonal perception during the employment interview. The research in this field has high practical value, as long as the improved personnel decisions bring financial benefits to organizations (Schmitt & Cann, 1998).

STUDY 1

Participants were asked to evaluate the resumes of various applicants for a Sales Manager position in order to define the best candidate, which resulted in a range of candidates from best to worst. After reading the job description, participants were instructed to read through the applications to identify the best candidates they would like to invite for an application interview. The Ss in the rational condition were asked to list different criteria, valid for

the position, such as years of relevant working experience, educational background. Pretesting ensured that the two working modes depicted different cognitive strategies.

METHOD

Participants and design. Participants in this study were 55 students (36 females and 19 males) recruited on the campus of the Ludwig-Maximilians-University in Munich. The age of participants ranged from 20 to 67 years (M = 27.56, SD = 10.44). Participants received either credit toward their course requirement in Psychology or a monetary compensation of 5 Euro (approximately $7). A 2x2 matrix design was applied involving cognitive style (rational or intuitive) and method (intuitive or rational. Participants were randomly assigned to one of the experimental conditions. Some other studies are known to engage students in for the evaluation of the CVs (e.g. Conway & Peneno, 1999; Watkins & Johnston, 2000).

Procedure. Participants arrived one by one at the laboratory room. They have received the job description for a Sales Manager position. The job description was a one-page description of the tasks, responsibilities and expectations of the position. Participants received six different resumes and were instructed to read these resumes through in order to decide which of the candidates is most suitable for the position stated in the job description. Resumes consisted of a two or three pages. No photos were attached to the resumes, gender was also omitted. All of the candidates were approximately of the same age group (35 to 40 years). The resumes were very detailed, with extra recommendations from the previous working places and descriptions of the previous projects made. After reading the job description, participants received the resumes to work through and had to decide which candidate was the best. At the second step, they had to range the candidates.

Intuition vs. rationality induction procedure. After some brief instructions, participants engaged in reading the job description and the resumes. The written instructions asked participants in the rational condition to fill in the table with the factors relevant to the job, mentioned above for each and every participant. Participants were asked to make their decisions

step-by-step. After this was completed, Ss determined who should be invited for an interview. Participants in the intuitive condition received a short statement about the importance of intuitive decision making, and were asked to make a spontaneous, intuitive decision. All participants were asked if they made their decision intuitively or rationally. *Cognitive style measure.* A Rational Experiential Inventory (REI; Epstein, 1996) standardized questionnaire was used to measure the preferences for the intuitive or rational cognitive style. REI was constructed to quantify individual preference for *intuition*, understood in this study as a purely affective mode and not as a heuristic-affective mode which was assumed by Epstein (1996), and *deliberation*, understood as a reflective, cognition-based mode. Participants were instructed to complete the questionnaire either before or after the selection task, randomly. Participants answered each question on a 5-point Likert scale (1=not at all; 5=very much). After the participants accomplished these questions, they were thanked for participating and given their credit point or money. Exploratory factor analysis (SPSS) revealed two factors, corresponding to the scales Faith in Intuition (FI) and Need for Cognition (NC) of the Rational Experiential Inventory (REI; Keller et al., 2000). The reliability of the FI scale was above 0.86, almost the same as for the Faith in Intuition scale, 0.87. High interitem reliability was also mentioned by the authors of the German REI (Keller et al., 2000). REI was applied randomly before or after application screening.

Dependent measures. Participants were instructed to make a personnel selection decision to invite at least one of the candidates to an employment interview, based on the information received from reading the resumes. As stated above, resumes included a detailed description of the former work experience and educational background of the candidates. After completion of the reading of these resumes, participants were asked to range the candidates and select at least one of them to be invited to the interview. Students received points for the correctly "placed" candidates.

In order to define the best candidate and the correct range of candidates, ten Human Resource Officers were asked to screen the selected resumes for the position mentioned above. We have used the difference between the range of candidates, selected by the professionals and the range made by the participants of the study. The higher the difference, the fewer points were given to the participant.

Suspicion check. Three students were elected from the experiment due to the language problems. They reported some difficulties in understanding position description and reading the resumes.

RESULTS

Significant difference was found in the quality of the personnel decision made by intuitive and rational respondents in the step-by-step or spontaneous condition. Sex and age of the participants had no effect on the dependent variable nor were there any significant interactions. Thus, these variables are not considered further.

Manipulation check. To assess whether the cognitive inducement task produced the intended effect on participants, the self-evaluation score (with 1 - "I decided intuitively" and 10 - "The decision was made rationally") was subjected to a one-way analysis of variance (ANOVA). Results revealed a significant main effect for the decision made $F(1, 53) = 37.23$, $p < .001$, $\eta^2 = .42$. Further statistics showed that participants in the rational condition ($M = 6.48$, $SD = 2.364$) reported their decision making as more rational than intuitive. Participants in the intuitive condition ($M = 3.00$, $SD = 1.694$) reported their decision was made intuitively. Thus, the manipulation was successful.

Cognitive styles. To assess whether the cognitive style produced the intended effect on the results achieved by the participants, the cognitive style score was subjected to a one-way analysis of variance (one-way ANOVA) performed in SPSS. Results revealed a significant main effect for cognitive style $F(1, 53) = 4.061$, $p < .05$. The findings show that participants with the intuitive cognitive style ($M = 9.25$, $SD = 1.972$) achieved better results than partici-

pants with a rational cognitive style (M = 7.85, SD = 3.072). In general, 73% of males, and only 47% of females were found to be rational. Despite that this effect was not significant, women participating in the experiment were more intuitive than men.

Cognitive styles under rational and intuitive conditions. A 2 (cognitive style) x 2 (condition) analysis in a univariate analysis of variance (ANOVA) revealed a significant two-way interaction between cognitive style and rational vs. intuitive condition. $F(1, 51) = 18.624$, $p < .000$, $\eta^2 = .267$. The main effects for cognitive style $F(1, 51) = 4.495$, $p < .05$, $\eta^2 = = .081$, and for the condition $F(1, 51) = 8.012$, $p < .05$, $\eta^2 = .136$ were significant as well. *Intuitive participants.* Participants with the intuitive cognitive style (M = 10.00, SD = = 1.957) achieved better results in when working with tables than when making intuitive decisions, but these results did not reach significance (M = 8.72, SD = 1.848, $p > .05$). *Rational participants.* Participants with the rational cognitive style made worse decisions when working with tables (M = 5.85, SD = 2.537) and better when asked to decide intuitively (M = 9.588, SD = 2.032, $p < .05$).

Results of Study 1 show that both intuitive and rational participants received better results when making spontaneous decisions (M = 9.41, SD = 1.972) than when following a step-by-step procedure (M = 7.90, SD = 2.22, p = .034). Means and standard deviations are displayed in *Tables 1 and 2* and also in *Figure 2*.

Figure 2. Performance of intuitive and rational cognitive participants

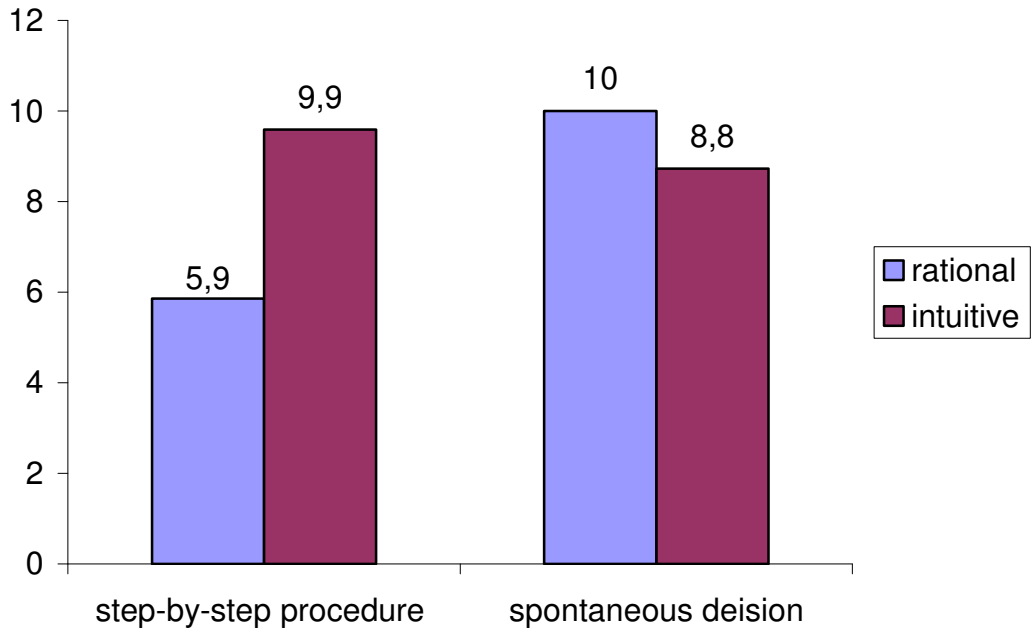


Table 1. Means and Standard Deviations of the intuitive and rational participants in the step-by-step and intuitive condition

	Condition					
Scale	rational, step-by-step			intuitive, spontaneous		
	M	*SD*	*N*	*M*	*SD*	*N*
Rational	5.85	2.537	14	10.00	1.95	13
Intuitive	9.58	2.032	17	8.72	1.84	11

Table 2. Means and Standard Deviations of the intuitive and rational cognitive style and step-by-step versus spontaneous condition

	rational			intuitive		
	M	*SD*	*N*	*M*	*SD*	*N*
Condition	7.90*	2.92	31	9.41*	1.976	24
Cognitive Style	7.85*	3.072	27	9.25*	1.974	28

* The mean difference is significant at the .05 level.

DISCUSSION

Replicating some of the previous studies, Study 1 revealed that intuitive cognitive style outperformed the rational one (e.g. Hammond et al., 1987). The results of this study also confirm the opinion of practitioners (e.g. Agor, 1991) that intuition is helpful when evaluating large amounts of information. In our study, participants were confronted with the application material of different candidates, including resumes, recommendations and other more or less relevant information. Rational participants had difficulties evaluating the relevance of the supported information. Intuitive participants managed this information evaluation with less troubles. At the same time, when the intuitive participants were asked to make a decision in the rational condition, they received even better results than when deciding just intuitively. Rational participants also made better decisions when asked to decide intuitively. We support the opinion of the other authors about the necessity to specify task properties and define the cognitive styles (Hammond et al., 1987). Further studies are needed to continue the research

in order to find out if the achieved results are also valid for the other personnel selection procedures, for example, Employment Interview or Assessment Center.

In this study we have also investigated if women are more intuitive than men. Supporting some previous analysis (e.g. Hall, 1979; Lieberman, 2000), the findings support the hypothesis that females are more intuitive than males. In sum, the view of the organizational practitioners has been supported. Intuitive decision making can be applied successfully when screening applications and resumes. According to the results, we stress the importance of experts knowing their cognitive styles and analyzing the way they perform the tasks.

STUDY 2

Study 2 aimed to investigate the efficacy of the intuitive cognitive style in the employment interview. Despite the findings of many researchers that standardized procedures are more valid and reliable, organizational practitioners consider intuition to be better. We have investigated whether step-by-step versus spontaneous, intuitive procedure is better, and if so then under which circumstances. Participants were shown a video with structured interviews of two male candidates considered to be equally attractive. After watching this video, participants were instructed to judge the personality qualities of the applicants. Pretesting ensured that the two working modes depicted different cognitive strategies.

METHOD

Participants and design. Participants in this study were 62 students (36 females and 26 males) who were recruited on the campus of the Ludwig-Maximilians-University in Munich. Participants' age ranged between 19 to 40 years ($\underline{M}$ = 23.27, $\underline{SD}$ = 3.70). They received experimental credit toward their course requirement in psychology or a monetary compensation of 5 Euro (approximately $7). A 2 (cognitive style: rational vs. intuitive) x 2 (method: intuitive vs. rational) between-participants factorial design was employed. Participants were randomly assigned to one of the experimental conditions. Other studies are known to use similar design (e.g. Borkenau & Liebler, 1992).

Procedure. Participants arrived one by one at the laboratory room. After a brief instruction, they were shown a video with two employment interviews. The interviews were structured and included such questions as: "What do you like the most when performing your job? What are your hobbies?" Etc. Participants were asked to about the personal qualities of the candidates interviewed. At the beginning, the first candidate was judged. For example, if he is more warm or cold, reserved, dominant etc. After this evaluation was made, participants were asked about the agreeableness of the candidate, if they like him or not. The procedure was repeated with the second candidate. Participants were also asked about their mood at the moment and how sure they were about the decisions they made.

Cognitive style measure. The Rational Experiential Inventory (REI; Epstein, 1996) was used to measure the preferences for the intuitive or rational cognitive style. The reliability of the scales was evaluated using Reliability Analysis in SPSS The reliability, with the Cronbachs Alpha of the Faith in Intuition about .79, as well as for the scale Need for Cognition of about .74. Like in the Study 1, REI was randomly applied before or after the interview.

Intuition vs. rationality induction procedure. After some brief instructions, participants engaged watching the employment interviews on a video. The written instructions asked participants in the rational condition to fill in the table with the lists of different personality criteria. Participants in the intuitive condition were asked to describe the persons behavior. Ss in the intuitive condition have received a short statement about the importance of the intuitive decision making and were asked to make a spontaneous, intuitive decision. We also asked participants if they have actually made their decision intuitively.

Dependent measures. Participants were instructed to describe the behavior of the candidates they have seen in the video. The personality description included such constructs as social competence, logical thinking, emotional stability, dominance, warmth etc. In order to get a criterion, candidates filmed, were asked to fill in the 16 Personality-Factor-Test (16 PF). The self-evaluation of the candidate and the evaluation of the participants was compared with

the evaluation of the participants. The less was the difference between the self-evaluation of the candidate, the more points they received.

RESULTS

Significant difference was found in the personality evaluation made by intuitive and rational respondents in the own or compensatory condition. Sex and age of the participants had no effect on the dependent variable nor were there any significant interactions. Thus, this variable is not considered further.

Manipulation check. To assess whether the cognitive inducement task produced the intended effect on participants, the self-evaluation on the decision made with maximum 10 for the rationality and minimum 1 for the intuitive decision made. The correlation between the rational and intuitive decision making was $r = -.27$, $p < .05$. Thus, we created a difference score by subtracting rational decision making from the intuitive. The difference score was subjected to a one-way analysis of variance (ANOVA). Results revealed a significant main effect for the decision made $F(1, 60) = 12.83$, $p < .001$, $\eta^2 = .17$. Further statistics showed that participants in the rational condition ($M = 5.68$, $SD = 2.741$) reported their decision making as more rational than intuitive. Participants in the intuitive condition ($M = 3.48$, $SD = 1.868$) reported their decision was made intuitively. Thus, the manipulation was successful.

Cognitive styles. In order to find out if the intuitive cognitive style was better in the interpersonal evaluation, the cognitive style score was subjected to a one-way analysis of variance (one-way ANOVA). Results revealed a significant main effect for cognitive style $F(1, 58) = 5.009$, $p < .05$. The results have shown that participants with the intuitive cognitive style ($M = 8.36$, $SD = 1.931$) achieved worse results than participants with a rational cognitive style ($M = 9.72$, $SD = 2.837$).

Cognitive styles under rational and intuitive conditions. A 2 (cognitive style) x 2 (condition) analysis in a univariate analysis of variance (ANOVA) revealed a significant two-way interaction between cognitive style and rational vs. intuitive condition. $F(1, 58) =$

= 12.979, p=.001, η^2 = .183. The main effects for cognitive style F(1, 58) = 5.557, p< .05, η^2 = = .087, and for the condition F(1, 58) = 4.247, p< .05, η^2 = .068 were significant as well. *Intuitive participants*. Further analysis showed that participants with the intuitive cognitive style (M = 10.10, SD = 1.969) achieved better results using step-by-step approach than when making spontaneous decisions (M = 6.91, SD = 2.898, p = 0.005).

Rational participants. Participants with the rational cognitive style were worse when using step-by-step procedure (M = 9.400, SD = 1.731) and slightly better when making intuitive decisions (M = 10.26, SD = 2.181, p > 0.05).

For both cognitive styles, results were slightly better in the step-by-step procedure (M = 9.60, SD = 1.801) than when making spontaneous decisions, but this difference failed to reach the significance (M = 8.77, SD = 2.931, p = .177). The interaction is displayed graphically in the *Figure 3 and Tables 3 and 4*.

Figure 3. Performance of intuitive and rational cognitive participants

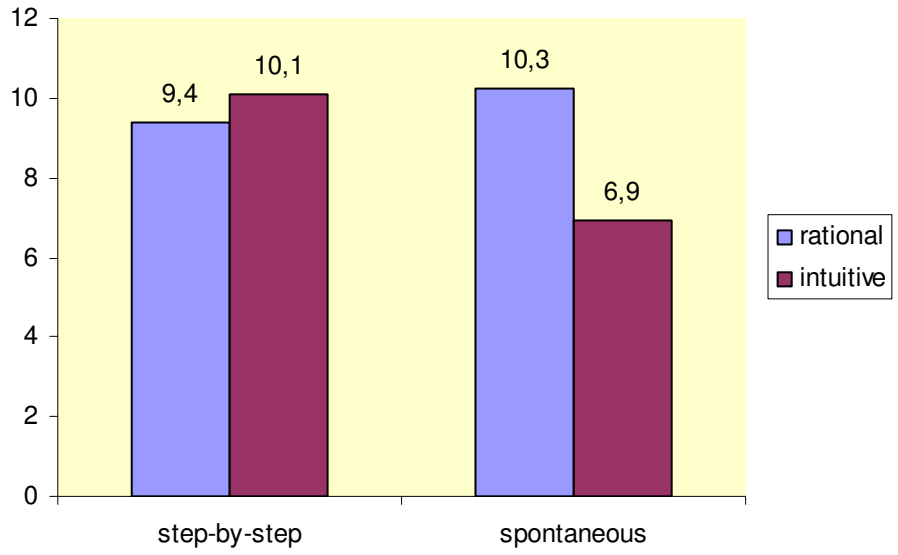


Table 3. Means and Standard Deviations of the intuitive and rational participants in the step-by-step and intuitive condition

	Condition					
Scale	rational, step-by-step			intuitive, spontaneous		
	M	*SD*	*N*	*M*	*SD*	*N*
Rational	9.40	1.732	25	10.26	2.186	15
Intuitive	10.10	1.969	10	6.91	2.678	12

Table 4. Means and Standard Deviations of the intuitive and rational cognitive style and step-by-step versus spontaneous condition

	rational			intuitive		
	M	*SD*	*N*	*M*	*SD*	*N*
Condition	9.60	1.802	35	8.77	2.913	27
Cognitive Style	9.72*	1.934	40	8.36*	2.837	22

* The mean difference is significant at the .05 level.

We asked the participants about their feeling of certainty in the decision made. There was no significant difference found in the feeling of certainty between the rational and intuitive participants. Participants were also asked about their impressions about the candidates before and after the interview. There was no significant correlation between the evaluation of liking or disliking someone before and after the interview. Significant negative correlation of $r = -.538$, $p < .05$ was found between finding candidate nice and the judgmental accuracy of the candidate for the participants with the intuitive cognitive style. This means that intuitive people make more mistakes when judging someone when they like the object being judged. There was no significant correlation between the evaluation of the more/less nice candidate and the judgmental accuracy made by rational people.

GENERAL DISCUSSION

These two studies show that the combination of the cognitive style and the way people process tasks can improve their performance in the personnel selection procedures. There is very little literature about the intuitive decision making in personnel selection. Some authors stressed the importance of the future research in this field, in order to minimize the gap between the scientific research and practical methods used in organizations. Scientists recommend the usage of the standardized methods and procedures, in order to eliminate disturbing effects, such as, Hello Effect, Sequence Effect. However, practitioners swear on using intuition and consider it to be of high importance, especially for processing large amounts of information. Personnel selection is a process with many steps, including application/resume screening, interviews, assessment centers and other methods, such as cognitive tests, personality tests etc. The goal of this dissertation is to find out which situations are better suited for intuition, and in which cases standardized procedures are better. The results of Study 1 supported the findings of cognitive researchers about the priority of the intuitive cognitive style (e.g. Whitecotton & Sanders, 1998; Hatsopoulos & Hatsopolos, 1999). In Study 1, intuitive decision making was found to be more accurate when screening resumes and applications of

different candidates. Applications included not only resumes, but also recommendations and self-descriptions of the projects fulfilled. The findings supported the opinion of organizational practitioners that intuition is a good method in cases of abundant information. Study 2 tested whether intuition is less helpful when making interpersonal judgments in the employment interview. Intuition was found to be less effective than rationality, especially in the case when a candidate was liked. Rational people were immune against the influence of feelings, and could judge the candidate accurately even when this candidate was liked or disliked. Despite the moderate difference in the performance of different participants in the intuitive and rational conditions, the judgmental efficacy in the employment interview is explained more by the mistakes, typical for the intuitive cognitive style, such as "blindness" toward the more preferred candidate.

Limitations

The sample of the two experiments is mainly comprised of students. The students were generally studying in the higher semesters with the major or minor in Psychology and had some background in the personnel selection. The experiments were made in the laboratory setting, which is characterized as a mechanical setting and, according to some authors (e.g. Armstrong & Priola, 2001), and consequently participants with the intuitive style are likely to perform worse than in the organic, natural setting. The future studies should study the performance of the intuitive and rational participants in the organic setting. Another point refers to the comparison between the performance efficacy of the intuitive and rational candidates. This performance was made indirectly (person versus model) and not directly (a person's intuitive processes versus a person's analytical processes), which is recommended by Hammond et al. (1987). We have decided ourselves for indirect comparisons, which is a more traditional method. Future research with the direct comparison of the intuitive and rational decision making of one participant is needed. Further studies should investigate the differences in the decision processing of the participants with the intuitive and rational styles.

Implications

The study supported findings regarding the application of the standardized methods in the employment process and, at the same time, supports the opinion of many practitioners that intuition is useful when working with big amounts of information. The practical implications of these studies refer to the appropriate usage of the intuitive and rational cognitive styles. The personnel selection literature described many different effects influencing expert judgments during the employment interviews. Unfortunately, these findings are seldom used in the organizational setting which leads to false placements and higher costs than when appropriate personnel selection methods are used. Personnel managers have been found to hire their employees simply by luck and intuition (Nowicki & Rosse, 2002). A correct combination of the cognitive styles of personnel managers and appropriate judgment methods could cut the costs for these false judgments. To sum up, the combination of intuitive decision making with rational, standardized methods results in a very high quality of judgment, especially when interviewing candidates. Intuition might be used in early stages of screening applications and resumes reducing the information to be evaluated in a time-effective way.

CONCLUSION

There are many articles recommending the use of standardized procedures in the personnel selection procedure and describing effects influencing personnel judgments. Intuition was found to be disturbing in the interpersonal judgments, but very few studies have concentrated on evaluating judgmental qualities in different stages of the personnel selection process. To sum-up, intuition should not be completely ignored in the personnel selection, but rather used more appropriately. Our findings suggest implying spontaneous, intuitive decision making in the first step of the personnel selection when screening the resumes. A standardized, step-by-step procedure should be used for the employment interview. For intuitive Human Resource practitioners, it is important to note that judgmental mistakes are not excluded even in the structured interviews, especially if the candidate is likeable.

CHAPTER 3

COMPARING EFFECTIVENESS OF RATIONAL AND INTUITIVE COGNITIVE STYLES IN PROCESSING ASSESSMENT CENTER SCORES

Studies 3 and 4 extend previous work on the effectiveness of the intuitive and rational cognitive styles in the different stages of personnel selection. In these studies, we also investigated additional theoretical processes by which the differences in the effectiveness of the decision making occur. Our findings supported the results of the Studies 1 and 2 and revealed that intuitive decisions were better when processing information, and rationality was more effective in interpersonal judgments.

Although prior research has found standardized methods as having higher validity in the personnel selection processes, it has been unable to offer acceptable reasons for their effectiveness. However, very few studies have investigated intuition in personnel selection. The present program of studies extends the research on the effectiveness of intuitive decision making in different stages and conditions, and it continues the research exploring whether the combination of cognitive styles improves the judgmental accuracy. Study 3 and 4 investigated information processing of the both cognitive styles. Study 3 tested whether intuitive participants were more likely to search for supporting information than rational. Study 4 investigated the learning styles of both types.

INTRODUCTION

DIFFERENCE OF THE INTUITIVE AND RATIONAL COGNITIVE PROCESSING IN THE PERSONNEL SELECTION

Personnel selection has been criticised by scientific researchers for its intuitive interpersonal perception (e.g. Guion, 1998, Obermann, 2002 etc.). Despite extensive scientific research in organizational (Mell 1988 etc.), and clinical settings (Wiesflecker & Kubinger, 2005), Human Resource practitioners continue to use non-standardized methods (Graves & Karren, 1996), attributing their successful decisions to intuition (Nowicki & Rosse, 2002). Personnel selection is not a one-step process. Each step includes information gathering and information evaluation. Among personnel selection methods the following are very popular: application screening, interview, Assessment Centers, personality or intelligence tests, and job performance tasks. Study 3 and 4 test the efficacy of the intuitive and rational cognitive styles when evaluating candidate performance during the employment interview and when handling the Assessment Center results. Both Study 3 and Study 4 test the hypothesis that participants with different cognitive styles have different learning preferences, and are likely to handle new information in a different way.

Information Selection

Human Resource practitioners are confronted with vast amounts of new information that needs to be processed very quickly. A part of this information is manipulative (like self-selling phrases in the application letter or a very good photo), some of this information is less relevant, sometimes it is faked, and sometimes information is missing. Human Resource managers tend to consider verbal or written recommendations of the candidates, for example, from the previous supervisor or colleague. In some cases, such recommendations are taken into account, and in some cases they are not. Research in the field of getting expert advice has been carried out by only a few researchers (e.g. Ubel & Loewenstein, 1997), for example with patients (Siminoff & Petting, 1989). A recent study by Jonas & Frey (2003) investigated the

information search in advisor-client interactions. Considering such previous research, this study asks participants to select the recommendations they would like to read about the candidates. These recommendations were provided by the former colleagues of the preferred candidate. In Studies 3 and 4 we investigate the information processing of the intuitive and rational participants.

Within the bounds of dissonance theory (Festinger, 1957, 1964), a whole body of research suggests that in order to reduce post-decisional conflicts people often prefer information supporting their choice, as opposed to information conflicting with it (for an overview see Frey, 1986; Frey, Schulz-Hardt, & Stahlberg, 1996).This tendency has been called "confirmation bias" (e.g., Schulz-Hardt, Frey, Leuthgens, & Moscovici, 2000). This has been shown in the area of attitudes (Lundgren & Prislin, 1998), expectations in negotiations (Pinkley, Griffith, & Northcraft, 1995), decisions (Frey, 1986; Jonas, Schulz-Hardt, Frey, & Thelen, 2001; Schulz-Hardt, Jochims, & Frey, 2002) and in group discussions (Schulz-Hardt, Frey, Lüthgens & Moscovici, 2000). Selective information search was found to negatively influence the decision accuracy (Kray & Galinski, 2003). Counterfactual mindsets were found to increase cognitive flexibility and assist in overcoming functional fixed. In a study by Galinsky & Moskowitz (2000), individuals were more likely to solve a problem in cases where they were primed with a counterfactual mind-set. In Study 3 and 4, we examine whether confirmation will influence the decision quality. We aim to find out, if rational or intuitive participants are looking for more supporting or conflicting information. The results of Study 2 show that intuitive participants made poor decisions on interpersonal judgments in cases where they liked the candidate evaluated. In Studies 3 and 4 we intend to discover whether intuitive participants have a higher confirmation-bias, and whether their faulty interpersonal evaluation can be explained by their selective information search.

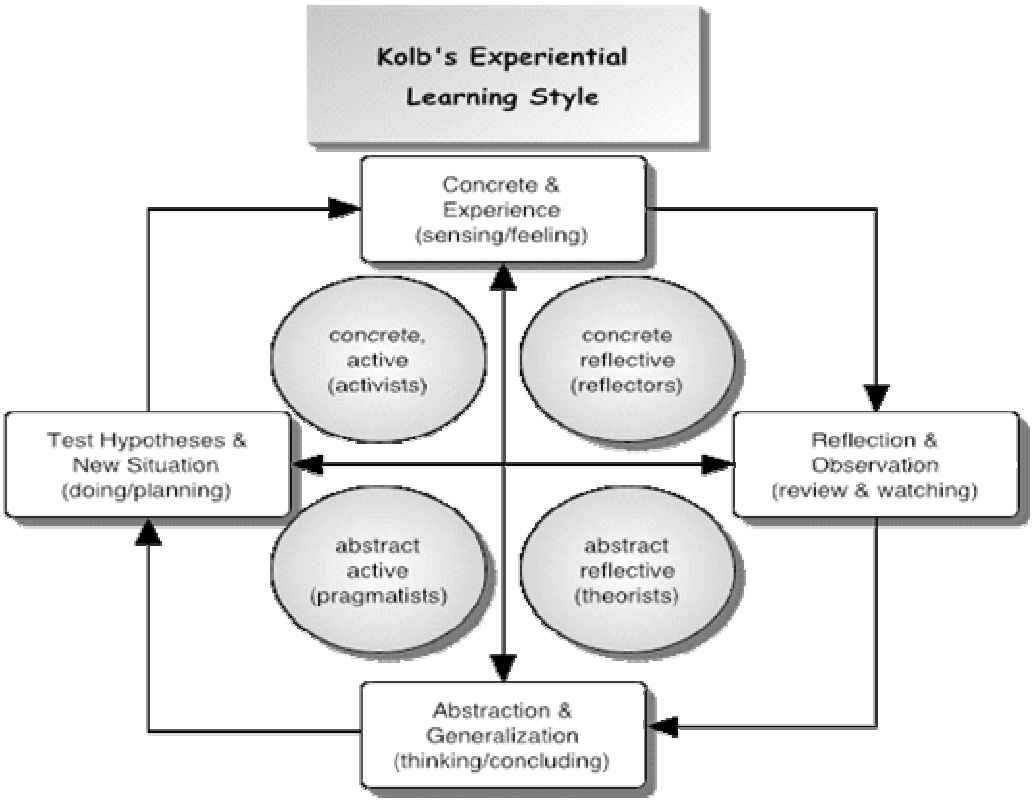
The information provided by former supervisors or colleagues does not usually display the whole picture. The validity of references was close to zero. According to the impression

management theory (Schlenker, 1980; Tedeschi, 1981), people strategically use and manipulate information to influence others and to create a favorable impression, for instance, selectively communicating information to superiors that emphasizes their successes and minimizes or hides their own failures (Caldwell & O'Reilly, 1982; O'Reilly, 1978).

Learning Style

Study 4 investigates further factors influencing the information processing of intuitive and rational participants. The results of the Study 1 and 2 show that intuitive and rational participants differ significantly in their decision making. Intuitive participants made better decisions when working with documents, whereas rational participants made better decisions when making interpersonal judgments. In Study 4 we aim to study learning style preferences of intuitive and rational participants. Sternberg and Grigorenko consider cognitive style to be "a bridge between what might seem to be two fairly distinct areas of psychological investigation: cognition and personality" (Sternberg & Grigorenko, 1997). The term "learning style" refers to a range of constructs from instructional preferences to cognitive style (Riding & Cheema, 1991). Curry (1983), locates learning style in between learning preferences and cognitive style in a layered model of individual difference constructs. Kolb (1984) maintains that people develop preferences for different learning styles, with four combinations of perceiving and processing of information determining the four learning styles. According to Kolb, the learning cycle involves four processes that must be present for learning to occur: Active Experimentation (AE), Reflective Observation (RO), Abstract Conceptualization (AC) and Concrete Experience (CE).

Figure 4. Learning Styles (Kolb, 1984)



Kolb (1984) differentiates between four different learning styles: two of them explain how learners gather experiences, and the other two define how these experiences are processed. Kolb places learning styles on a coordinate system: concrete experience and abstract, analytical thinking are on the Y-axis. They show the way people gather experiences, for example, sensing, feeling etc. or in a more analytic, comprehending way. We expect the intuitive participants to have higher preferences for Concrete Experience, and rational participants to prefer Abstract Generalization. Reflective Observation and Active Experimentation can be found on the X-axis. They tell us about how people process their experiences, for example, if people are more likely to observe and to reflect or they would like to act and experiment (e.g. Smith & Kolb, 1986). This current program of research will be instrumental for compiling information about how intuitive and rational participants gather and process their information.

Some research is known to compare the learning preferences of participants with cognitive styles. For instance, Sadler-Smith et al. (2001) investigated the relationship between

the Learning Style Inventory scales (LSI, Kolb, 1985) and Cognitive Style Analysis (CSA; Riding et al., 1991). In this study, we continue this investigation by testing the relationship between the cognitive style scales (Rational Experiential Inventory, REI; 1996) and Learning Style Inventory scales. We also aim to find out, in what way intuitive and rational participants gather and process the information.

Present Research

This study focuses on intuitive decision making, and whether it is successful at some stages of the personnel selection, like e.g. application screening, Assessment Centers etc., or, based on the findings of some scientific researchers, should ignored in favor of analytical, rational decision making. Intuitive decision making promotes, for example, the reduction of short-term costs and saves time when reading all of the documents included in the application. Both personnel managers and candidates prefer unstructured interviews, which seem to measure other constructs than structured interviews (e.g. Schuler & Funke, 1993). Studies 1 and 2 prove that the combination of cognitive styles (rational or intuitive) with the decision making process (rational or intuitive) improves the results in such personnel selection tasks as application screening and employment interviews. Study 3 tested these differences in an experimental paradigm when dealing with the results achieved in an Assessment Center. Study 4 focused on the learning styles of the intuitive and rational personalities when judging group discussion as part of an Assessment Center exercise.

STUDY 3

Participants were confronted with the results of 6 different candidates who participated in an Assessment Center. Their task was to select the best candidate, as well as to range the candidates. After reading the job description, participants were instructed to evaluate the scores and to define the best candidates they would like to hire. The subjects in the rational condition had the results presented in a table and were supposed to evaluate and calculate the validity of these criteria for the position they read about in the job description (e.g. years of

relevant working experience, educational background etc). In the intuitive condition, participants received the results in graphic form and were asked to range the candidates based on the information presented in the graphic. Pre-testing ensured that the two treatment conditions depicted different cognitive strategies.

METHOD

Participants and design. Participants in this study were 68 students (48 females and 20 males) who were recruited on the campus of the University of Munich (LMU). Participant ages ranged from 20 to 40 years (M = 25.16, SD = 4.507). They received either an experimental credit toward their course requirement in psychology or a monetary compensation of 5 Euro (approximately $7 US). A 2 (cognitive style: rational vs. intuitive) x 2 (method: intuitive vs. rational) between-participants factorial design was employed. Participants were randomly assigned to one of the experimental conditions. Some other studies are known to use similar design in order to find out the effectiveness of the expert judgments (e.g. Hammond, Hamm, Grassia & Pearson, 1987).

Procedure. Participants arrived one by one at the laboratory room. They have received the job description of a position as a Chief Architect and six candidate profiles. Participants were instructed to read the job description attentively. Based on the information presented in the job description (e.g. the tasks and responsibilities of the future employee, the background of the applicant and the short description of the company), participants had to decide, which of the applicants was the most well suited for the position mentioned in the job description. To accomplish this, they received the candidate profiles, either in form of a table or as in a graphic form. The profiles included different scores applicants received during the Assessment Center. For instance, work experience, management experience, but also social skills, like the ability to work in team etc. The participants had to evaluate the value of these scores for the position and to find the best possible candidate for the position mentioned above. They also had to range the candidates from one (the best) to six (the less preferred candidate). The

Learning Style Inventory and Rational Experiential Inventory were presented either before or after evaluation randomly. In order to get a criterion, eleven Human Resource managers were asked to select the best candidate and to range the candidates.

Intuition vs. rationality induction procedure. After a brief instruction, participants engaged in reading the job description and candidates' profiles. In the rational condition, participants were involved in a step-by-step procedure where they had to fill in the table with the results relevant to the job for every participant. After the evaluation, participants were supposed to range the candidates in order to determine, who of them should be hired. Participants in the intuitive condition have received the same profiles not as a table, but as a graph with the candidate profiles, and, after reading a short statement about the importance of the intuitive decision making, were asked to make a spontaneous decision. Participants were asked if they made their decision more intuitively or rationally.

Cognitive style measure. The Rational Experiential Inventory (REI; Epstein, 1996), a standardized questionnaire, was used to measure the preferences for the intuitive or rational cognitive style. REI measures individual preference for intuition, which is understood as a purely affective mode and not as a heuristic-affective mode (see Epstein, 1996). Participants had to fill in the questionnaire either before or after selection task, randomly. The reliability of the Faith in Intuition (FI) scale was above 0.86, and 0.93 for the Need for Cognition (NC), measured used Reliability Analysis Procedure in SPSS.

Dependent measures. Participants were instructed to make a personnel selection decision, to decide, who of the candidates was the best suited for a position mentioned above. After participants evaluated the candidate profiles, they were asked to range the candidates and select one of them as the best candidate for a position of the City Architect. In order to define the correct range of candidates, Human Resource Professionals were asked to conduct the same procedure. When the difference between the range of the candidates made by the HR professionals was small, students received more points for the correctly "placed" candidates.

Information selection was measured in the following way: after decision was made, participants received the recommendations from the former colleagues, managers and subordinates of the first-choice candidate. Participants were supposed to answer the question if they wanted to read the complete positive or negative recommendation about their first-choice candidate. After answering this question, participants were asked if they would like to change their opinion and select another candidate.

Learning Style Measure. The Learning Style Inventory (Kolb, Rubin & Osland, 1995) consisting of 24 items comprising single adjectives in six sets from which respondents are required to rank (1–4) according to the extent to which they feel the adjective applies to them. The four scales are concrete experience (CE), reflective observation (RO), abstract conceptualisation (AC) and active experimentation (AE). As mentioned above, the Questionnaire was presented either before or after personnel decision was made,

RESULTS

Significant difference was found in the quality of the personnel decision made by intuitive and rational respondents in the own or compensatory condition. Age and sex of the participants had no effect on the dependent variable nor were there any significant interactions and are not considered further.

Manipulation check. To assess whether the cognitive inducement task produced the intended effect on the participants, the self-evaluation score was subjected to a one-way analysis of variance (ANOVA). Participants had to evaluate their decision-making on a ten-point scale (with 1 - “I decided intuitively” and 10 - “The decision was made rationally”). Results revealed a significant main effect for the decision made $\underline{F}(1, 66) = 19.69$, $\underline{p} < .001$, $\underline{\eta}^2 = .23$. Further statistics showed that participants in the rational condition ($M = 6.70$, $\underline{SD} = 2.162$) reported their decision making as more rational than intuitive. Participants in the intuitive condition ($\underline{M} = 4.21$, $\underline{SD} = 2.318$) reported their decision was made intuitively. Thus, the manipulation was successful.

Cognitive styles. To assess whether the cognitive style produced the intended effect on the results, achieved by the participants, a one-way analysis of variance (one-way ANOVA) was used to assess the differences. Results revealed a difference close to significant for cognitive style $F(1, 66) = 3.67$, $p = .059$. The results showed that participants with the intuitive cognitive style ($M = 5.80$) achieved better results than participants with a rational cognitive style ($M = 4.58$).

Cognitive styles under rational and intuitive conditions. A 2 (cognitive style) x 2 (condition) analysis in a univariate analysis of variance (ANOVA) revealed a significant two-way interaction between cognitive style and rational vs. intuitive condition. $F(1, 64) = = 14.955$, $p < .000$, $\eta^2 = .189$. The main effects for cognitive style $F(1, 64) = 5.666$, $p < .05$, $\eta^2 = .081$, and for intuitive vs. rational condition $F(1, 64) = 4.011$, $p < .05$, $\eta^2 = .059$ were significant.

Intuitive participants. Statistical analysis has shown that participants with the intuitive cognitive style ($M = 4.9$) achieved better results in the compensatory condition than in the own ($M = 3.8$, $p = .000$).

Rational participants. The similar findings were for the participants with a rational cognitive style: ($M = 4.00$) in the own condition and better, but not significantly, in the intuitive condition ($M = 7.45$, $p > .05$).

The difference between the step-by-step and spontaneous information processes was not significant. The interaction is displayed graphically in the *Figure 5*, means and standard deviations are in the *Tables 5* and *6*.

Table 5. Means and Standard Deviations of the intuitive and rational participants in the step-by-step and intuitive condition

	Condition					
Scale	rational, step-by-step			intuitive, spontaneous		
	M	***SD***	***N***	***M***	***SD***	***N***
Rational	**4.00**	**2.732**	**16**	**4.87**	**2.268**	**32**
Intuitive	**7.45**	**0.934**	**11**	**3.77**	**1.563**	**9**

Figure 5. Performance of intuitive and rational cognitive participants in different conditions

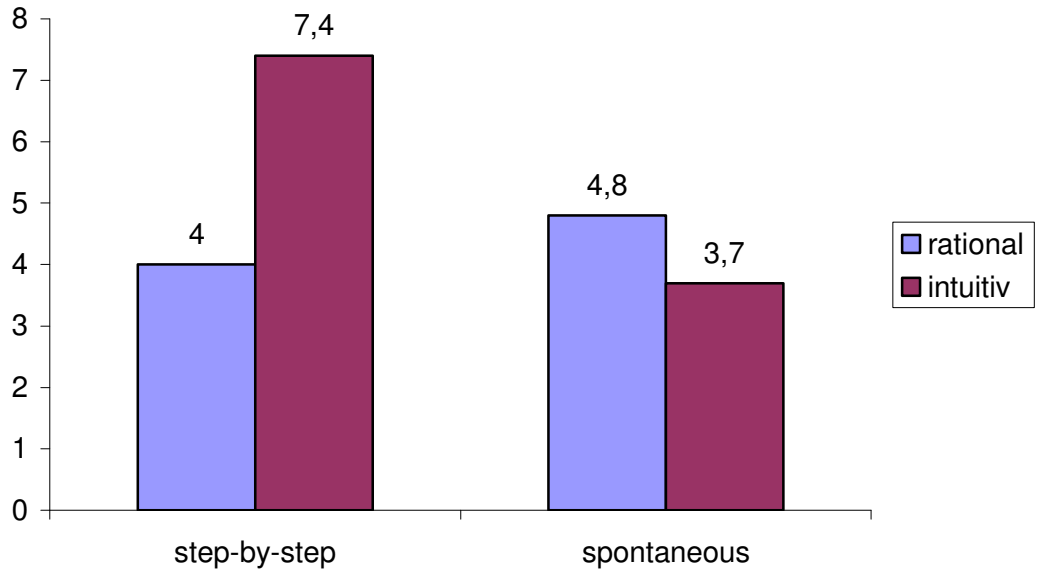


Table 6. Means and Standard Deviations of the intuitive and rational cognitive style and step-by-step versus spontaneous condition

	rational			**intuitive**		
	M	***SD***	***N***	***M***	***SD***	***N***
Condition	**5.40**	**2.761**	**27**	**4.63**	**2.165**	**41**
Cognitive Style	4.58*	2.439	48	5.80*	2.238	20

* The mean difference is significant at the .05 level.

Information selection. In order to assess whether the cognitive style produced the intended effect on the type of information selection preferred by the participants, a one-way analysis of variance (one-way ANOVA) was used. Results revealed a significant difference for cognitive style $F(1, 66) = 10.643$, $p = .002$. The results revealed that intuitive participants were more likely to read the statements supporting their opinion ($M = 0.90$) than the participants with a rational cognitive style ($M = -0.10$).

Selective information selection under rational and intuitive conditions. A 2 (cognitive style) x 2 (condition) analysis in a univariate analysis of variance (ANOVA) revealed a significant two-way interaction between cognitive style and rational vs. intuitive condition. $F(1, 64) = 12.323$, $p = .001$, $\eta^2 = .161$. The main effects for cognitive style $F(1, 64) = 4.469$, $p < .05$, $\eta^2 = .065$, and for intuitive vs. rational condition $F(1, 64) = 11.580$, $p < .05$, $\eta^2 = .065$ were significant.

Intuitive participants. Statistical analysis has shown that participants with the intuitive cognitive style (M = 0.03) were less likely to read the articles supporting their opinion in the intuitive condition than in the rational one (M = 1.50, p < .05).

Rational participants. Participants with a rational cognitive style were more interested to learn about the alternative opinion in the rational condition (M = -0.38) in the own condition and better, but not significantly better, in the intuitive condition (M = 0.01, p >.05). Most of the participants (98%) were likely to keep their decision regarding the person selected, despite the quality of information presented to them after the decision has been made. Please, find a graphical interaction in the *Figures 6 and 7,* means and standard deviations are listed in the *Tables 7* and *8.*

Table 7. Means and Standard Deviations for the information search of the intuitive and rational participants in the step-by-step and intuitive condition

	Condition					
Scale	rational, step-by-step			intuitive, spontaneous		
	M	***SD***	***N***	***M***	***SD***	***N***
Rational	**-0.37**	**0.957**	**16**	**0.00**	**1.149**	**32**
Intuitive	**1.63**	**1.361**	**11**	**0.00**	**0.080**	**9**

Figure 6. Information search of intuitive and rational cognitive participants in different conditions

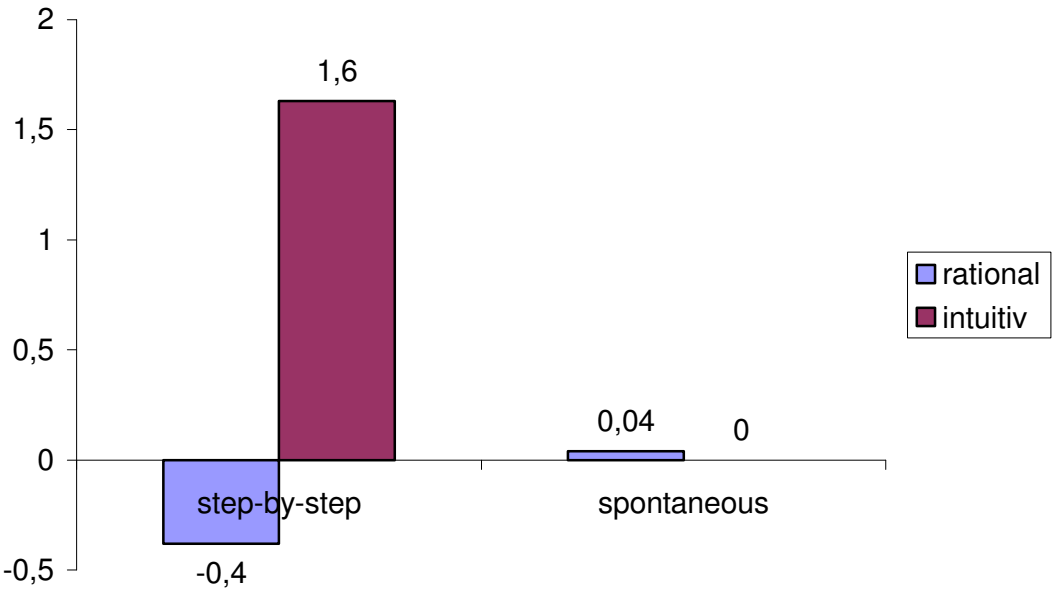
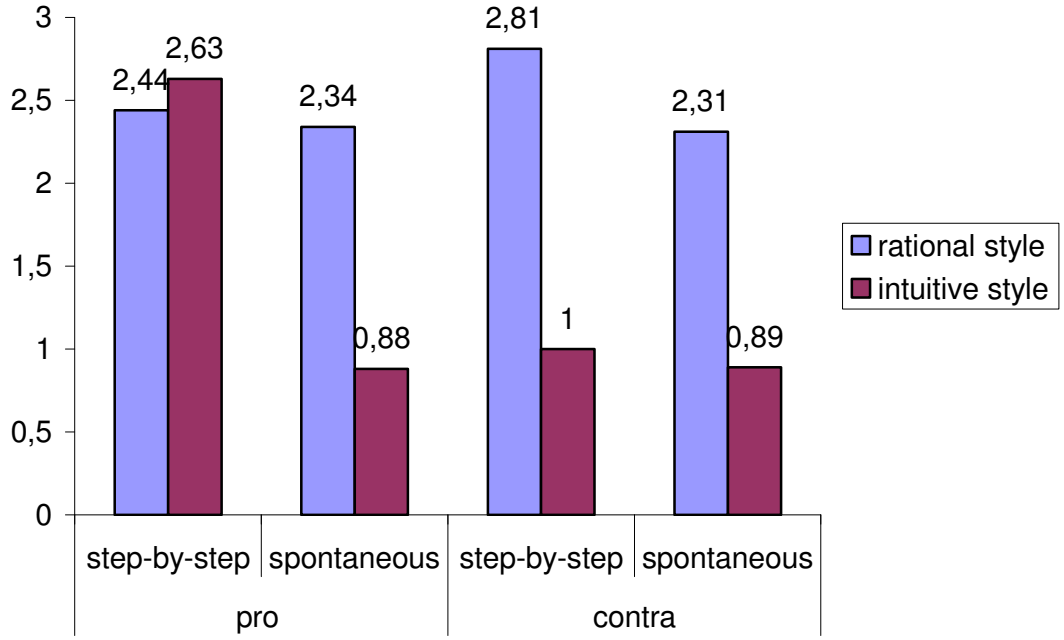


Table 8. Means and Standard Deviations for the information search of the intuitive and rational participants in different conditions

	rational			**intuitive**		
	M	***SD***	***N***	***M***	***SD***	***N***
Condition	**0.44**	**1.502**	**27**	**0.00**	**1.012**	**41**
Cognitive Style	-0.10*	1.096	48	0.90*	1.293	20

* The mean difference is significant at the .05 level.

Figure 7. Information search of intuitive and rational cognitive participants in different conditions, searching for supporting or conflicting information



DISCUSSION

Study 3 replicated the results of the Studies 1 and 2 and revealed that the combination of cognitive styles improves the results. In this case, it was achieved using the combination of different working methods. According to some researchers (e.g. Hammond, Hamm, Grassia & Pearson, 1987) intuitive cognition frequently outperformed analytical cognition in expert judgments. The accuracy of judgments was related to the degree of correspondence between the type of task (intuition inducing versus analysis inducing) and the type of the S's cognitive activity (intuition versus analysis). In order to investigate the decision making by rational and intuitive Ss, we replicated the results of the previous research (e.g. Agor, 1989) that intuition is of help when making personnel decisions based on analysis of sufficient amount of information.

Study 3 also revealed that intuitive participants have higher confirmation bias than rational participants. Rational participants were more likely to read the controversial information. This tendency changed when rational participants were asked to make spontaneous deci-

sions. In this case, they were looking for the articles supporting their opinion rather than for controversial information. When dealing with the external recommendations, both strategies are wrong. In our study, reading supporting or controversial information did not have an influence on the quality of decision made. For both methods (supporting or conflicting), the validity of the recommendations is much too low to be considered. This part of the findings is of more theoretical than practical value. When making spontaneous decisions, both rational and intuitive participants were likely to ignore the additional information in favor of the previous decision made. Further research is necessary to determine if intuitive participants have a higher information-bias in cases where they have to evaluate real people and not just documents. Study 4 continues this investigation.

STUDY 4

Study 4 continues the research on the effectiveness of the intuitive decision making in different stages of personnel selection. Another goal of the study is to examine whether intuitive decision-makers process information differently than rational decision-makers. For this purpose, participants were shown a video of a group discussion had by Assessment Center participants. After watching this video, participants were instructed to make a decision about the suitability of candidates for a position in a middle level management. Pretesting ensured that the two working modes depicted different cognitive strategies.

METHOD

Participants and design. Participants in this study were 55 students (34 females and 21 males), recruited on the campus of the Ludwig-Maximilians-University in Munich. The age of participants ranged between 17 to 39 years ($\underline{M}$ = 25.87, $\underline{SD}$ = 3.92). They received experimental credit toward their course requirement in psychology or a monetary compensation of 5 Euro (approximately $7). A 2 (cognitive style: rational vs. intuitive) x 2 (method: intuitive vs. rational) between-participants factorial design was employed, with the random assignment to one of the experimental conditions. Some studies are known to use the videos with the thin

slices of information, where students were asked to judge the professors filmed after half a minute (see Ambady, Hallahan & Rosenthal, 1992).

Procedure. Participants arrived one by one at the laboratory room. After a brief instruction, they were shown a video (approximately 15 minutes long) with a group discussion. The discussion was filmed during the Assessment Center and the topic of the conversation was the organization of breaks for different groups of employees. Participants were asked to range the candidates presented in the video from 1 (the best candidate) to 6 (the least suitable candidate). The Rational Experiential Inventory and Learning Style Inventory were presented either before or after the video randomly. The part with the recommendations for the first-choice candidate was provided after the video.

Intuition vs. rationality induction procedure. After reading an instruction, participants engaged watching the employment interviews on a video. After half a minute, a video was turned out, and participants in the intuitive condition were supposed to make spontaneous decision on which candidate they would like to hire. After the first choice was made, participants were asked to continue watching the video and make their second decision afterwards. In the rational condition, participants were watching the video without further interruptions. After the video was over, the written instructions asked participants in the rational condition to fill in the table with the lists of different personality criteria. Participants in the intuitive condition were asked to describe the behavior. Ss in the intuitive condition have received a short statement about the importance of the intuitive decision making and were asked to make a spontaneous, intuitive decision. Participants were asked about the decision they made, to determine if it was more intuitive or rational.

Cognitive style measure. The Rational Experiential Inventory (REI; Epstein et al., 1996) standardized questionnaire was used to measure the preferences for the intuitive or rational cognitive style. The reliability of the scale Faith in Intuition was.89, and the scale Need

for Cognition was .78. Reliability analysis was achieved using Reliability Analysis Procedure in SPSS. REI was assigned randomly before or after the video.

Dependent measures. Participants were instructed to range the candidates they have seen and to make a decision about the best candidate. In order to get a criterion, Human Resource Officers were asked to range the candidates. Participants received more points when there was a smaller difference between the range established by the experts and that of the participants. In order to measure how intuitive and rational Ss gather and process information, the Learning Style Inventory (Kolb, 1984) was used. The information selection procedure was carried out in the same way as described in the Study 3. Participants were instructed to read eight articles with positive and negative statements about their first-choice candidate. After reading an article, Ss were asked if they would like to read the full version of the article. After participants accomplished these questions, they were thanked for participating and given their credit point.

RESULTS

Significant difference was found in the personality evaluation made by intuitive and rational respondents in the own or compensatory condition. Sex and age of the participants had no effect on the dependent variable.

Manipulation check. To assess whether the cognitive inducement task produced the intended effect on participants, they were asked about the decision made. The self-evaluation of the decision made score (with 1 - “I decided intuitively” and 10 - “The decision was made rationally”) was subjected to a one-way analysis of variance (ANOVA). Results revealed a significant main effect for the decision made $\underline{F}(1, 53) = 11.80$, $\underline{p} < .001$, $\underline{\eta}^2 = .18$. Further statistics showed that participants in the rational condition ($M = 5.95$, $\underline{SD} = 2.513$) reported their decision making as more rational than intuitive. Participants in the intuitive condition ($\underline{M} = 3.93$, $\underline{SD} = 1.848$) reported their decision was made intuitively. Thus, the manipulation was successful.

Cognitive styles. A one-way analysis of variance (one-way ANOVA) was performed to find out if the rational cognitive style was better in the interpersonal evaluation, with the cognitive style score subjected to. Results revealed a difference, close to significant, in the main effect for cognitive style $F(1, 53) = 3.647$, $p = .062$. The results have shown that participants with the rational cognitive style achieved slightly better results ($M = 5.90$, $SD =$ = .870) than participants with an intuitive cognitive style ($M = 5.41$, $SD = 1.018$).

Cognitive styles under rational and intuitive conditions. A 2 (cognitive style) x 2 (condition) analysis in a univariate analysis of variance (ANOVA) revealed a significant two-way interaction between cognitive style and rational vs. intuitive condition. $F(1, 50) = 9.719$, $p=.003$, $\eta^2 = .163$. The main effects for cognitive style $F(1, 50) = 4.175$, $p< .05$, $\eta^2 = .077$, and for intuitive vs. rational condition $F(1, 50) = 9.716$, $p< .05$, $\eta^2 = .163$ were significant as well.

Intuitive participants. Participants with the intuitive cognitive style ($M = 6.08$) achieved better results in the compensatory condition than in the own ($M = 4.75$, $p = .000$).

Rational participants. The difference of the decision accuracy of the rational participants was not significant, they achieved slightly worse results in the step-by-step condition ($M = 5.81$) than in the intuitive one ($M = 5.95$, $p >.05$). The interaction is displayed graphically in the *Figure 7*. For means and Standard Deviations, see *Tables 9* and *10.* There was no significant interaction effect found for the feeling of decision certainty. Performance in the step-by-step procedure did not reach significance, compared to the spontaneous decision making.

Figure 8. Performance of intuitive and rational cognitive participants in different conditions

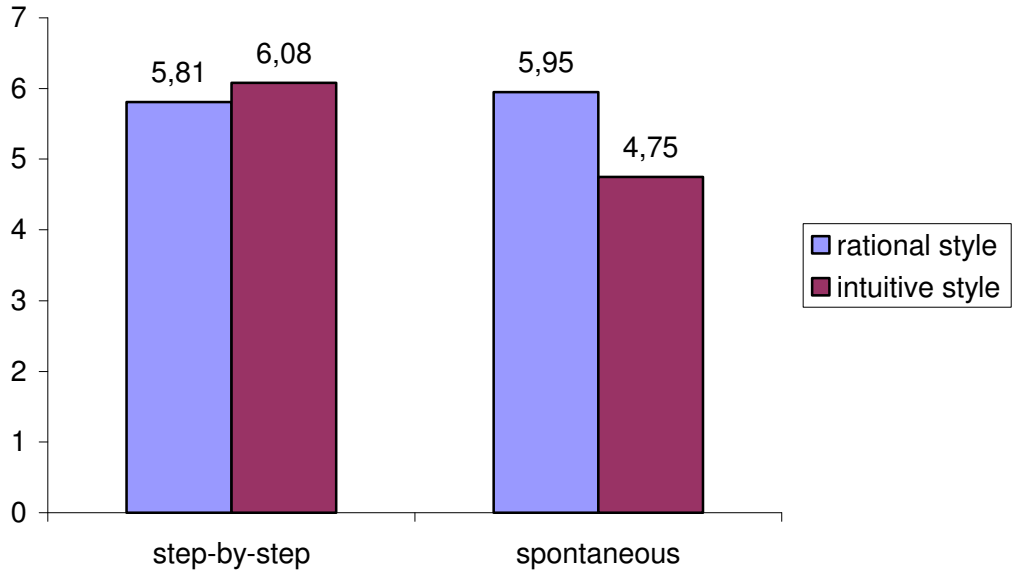


Table 9. Means and Standard Deviations of the intuitive and rational participants in the step-by-step and intuitive condition

	Condition					
Scale	rational, step-by-step			intuitive, spontaneous		
	M	***SD***	***N***	***M***	***SD***	***N***
Rational	**5.81**	**0.75**	**11**	**5.95**	**0.944**	**20**
Intuitive	**6.08**	**0.900**	**12**	**4.75**	**0.621**	**12**

Information search. Significant interaction effect was found for the selective information search. People with the intuitive cognitive style were expected to read the articles supporting their opinion. Rational people were thought to read alternative information when mak-

ing rational decisions and supportive information in the compensatory condition. A 2 (cognitive style) x 2 (condition) analysis in a multivariate analysis of variance (MANOVA) revealed a significant two-way interaction between cognitive style and rational vs. intuitive condition. F (1,54) = 3.321, p < 0.05, η^2 = .085. The main effects for cognitive style (preference) was significant: F (1, 54) = 17.810, p = 0.00, η^2 = .331, and for intuitive vs. rational condition F (1,54) = 6,864, p = 0.00, η^2 = .085 were found to be significant.

Intuitive participants. Similar to the findings in the Study 3, participants with the intuitive cognitive style were less likely to read the articles supporting their opinion in the intuitive condition (M = 1.33, SD = 1.566) than in the rational one (M = 1.50, SD = .492, p > .05), but this difference did not reach significance.

Rational particpants. Participants with a rational cognitive style were more interested to learn about the alternative opinion in the intuitive condition (M = -0.82, SD = 1.328) condition and significantly less in the rational condition (M = 1.45, SD = 1.932, p = .002). Please, find a graphical interaction in the *Figure 9*, means and standard deviations are listed in the *Table 10.*

Figure 9. Information search of intuitive and rational cognitive participants in different conditions.

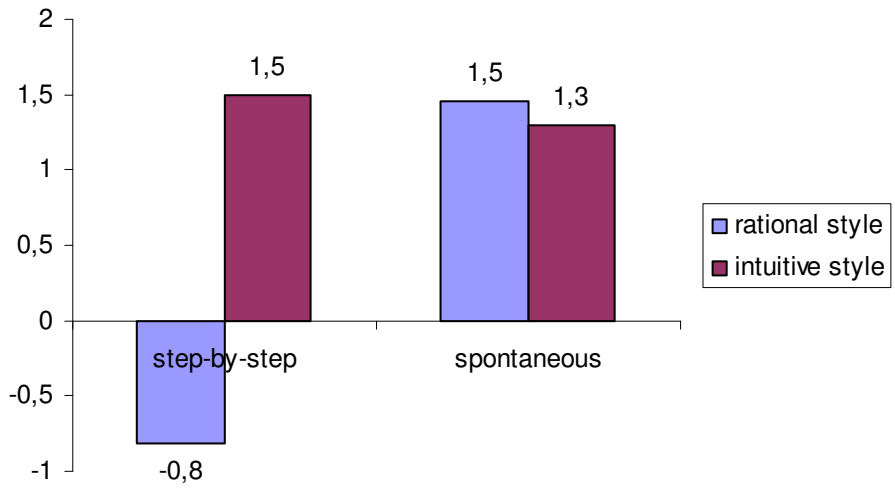


Table 10. Means and Standard Deviations for the information search of the intuitive and rational participants in the step-by-step and intuitive condition

	Condition					
Scale	rational, step-by-step			intuitive, spontaneous		
	M	***SD***	***N***	***M***	***SD***	***N***
Rational	**-0.81**	**1.328**	**11**	**1.45**	**1.932**	**20**
Intuitive	**1.50**	**1.567**	**12**	**1.33**	**0.492**	**12**

Table 11. Means and Standard Deviations of the intuitive and rational cognitive style and step-by-step versus spontaneous condition

	rational			**intuitive**		
	M	***SD***	***N***	***M***	***SD***	***N***
Condition	**0.39***	**1.852**	**23**	**1.40***	**1.542**	**32**
Cognitive Style	0.64	2.042	31	1.41	1.138	24

* The mean difference is significant at the .05 level.

Learning styles. Significant correlations were found between the following learning styles: AC and CE (r = -.729) and AE and RO (r = -0.464), but also RO and AC (r = -.405). The findings do not support the idea of two bipolar dimensions (see Yahya, 1998). There was statistically significant correlation between intuitive cognitive style and such learning styles, as CE (r = .430, p = .001) and AC (r = -.373, p = .001). Rational cognitive style did not correlate with the learning styles, which supports previous findings (e.g. Riding & Rayner, 1998). Previous research has shown an interaction between style and gender (e.g. Sadler-Smith et al., 2001). Repeated Measures procedure was used in SPSS to test the hypothesis if there are any differences in the learning preferences of intuitive and rational people, with gender as a covariate. The learning by cognitive style interaction effect was significant F (3, 156) = = 2.854, p = .039. Learning style by gender interaction was also significant: F (3, 156) = = 15.481, p = .000. Main effect of learning style was significant F (3, 156) = 16.998, p = .000. The main effect of cognitive style was not significant. Participants with rational cognitive style were more likely to prefer the RO (Realistic Observation) style (M = 22.62, SD = = 4.631, p <.05), and participants with the intuitive cognitive style were likely to choose AE (Active Experimentation) learning style (M = 24.03, SD = 3.894, p <.05). Means and standard deviations are presented in the *Table 12* and the Interaction is displayed graphically in the *Figure 10*.

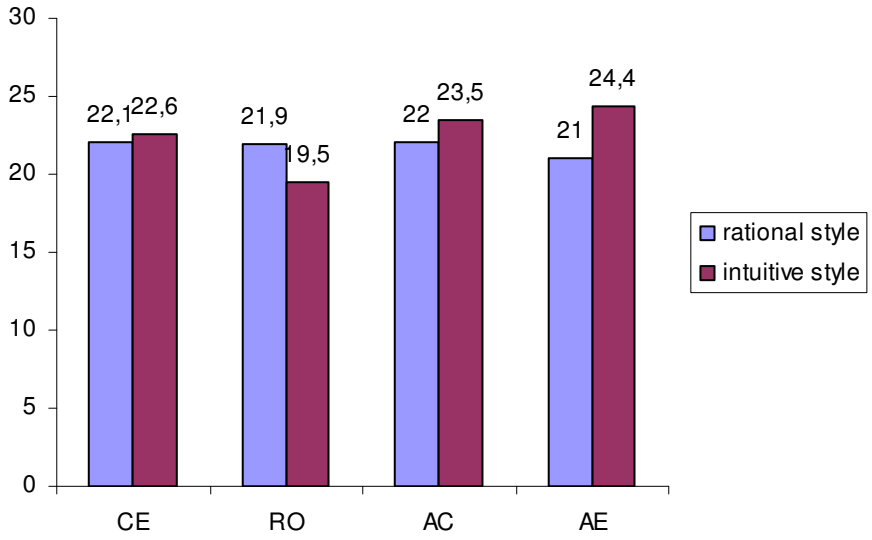
Table 12. Means of the Learning Style Preferences for intuitive and rational cognitive styles

	Cognitive Style					
Scale	**rational**			**intuitive**		
	M	***SD***	***N***	***M***	***SD***	***N***
CE	**22.12**	**4.917**	**31**	**22.62**	**4.232**	**24**
RO	22.62*	4.631	31	19.45*	2.873	24
AC	24.00	5.259	31	23.54	4.021	24
AE	22.03*	3.894	31	24.37*	3.563	24

NOTE: CE = Concrete Experience, RO = Realistic Observation, AC = Abstract Conceptualizing, AE = Active Experience.

* The mean difference is significant at the .05 level.

Figure 10. Learning preferences of intuitive and rational participants



GENERAL DISCUSSION

In two studies, the results of the Studies 1 and 2 were replicated. It was found that the combination of the cognitive style and the way people process tasks can improve their performance in the personnel selection procedures. The results of the Study 3 support the findings of the Study 1, stating that intuition should not be put aside, but is quite helpful in such situations, when quick decisions are needed. In the Study 3, intuitive decision making was found to be more accurate when handling with the results of the Assessment Center. Rationality was found to be more useful for the interpersonal judgments, which was in line with the results from the Study 2. This was very noticeable in the employment interviews or as observers during the Assessment Center. These findings can be explained by considering the learning style preferences of the intuitive and rational participants. Rational participants tend to use Realistic Observation, which might explain their good observer qualities. Intuitive participants tend to use Active Experimentation and might handle data with ease, in comparison to the rational participants. Intuitive participants showed higher confirmation bias than rational participants, especially in the step-by-step procedure. Rational participants were interested in the controversial information, but not when asked to decide spontaneously.

Rational participants were also likely to choose the Abstract Conceptualization Learning style. According to Kolb (1985), people with this learning style preference are often theorists who enjoy learning through frontal lectures, and by trying to find out the relationships between some actions. Learners with the combination of such learning styles as Abstract Conceptualization and Realistic Observation are called "Assimilators". The strengths of this learning style can be seen in the conception of the theoretical models. They are likely to make inductive conclusions and integrate the separate facts to the concepts and definitions. People with these learning preferences are more likely to work as mathematicians or scientists.

Intuitive participants were also likely to choose Concrete Experience. Learners with Concrete Experience style are considered to be pragmatists, having knowledge application as the focus of their investigation. Active Experimentation is typical for activists searching for new experiences. The combination of both learning styles – Active Experimentation and Concrete Experience is called Accommodator. The strengths of these learning styles are in the design of activities. They are likely to learn by trial-and-error, do not trust theories, but rather their own experiences. They specialize in practical activities and are likely to make their decisions intuitively.

Limitations

The participants of the both studies were mainly students in higher semesters with a major or minor in Psychology and having some background in the personnel selection. Both experiments were carried out in the laboratory setting, which is a mechanic setting. According to Armstrong & Priola (2001), rational participants perform better in the mechanic setting than in the organic or natural one. The opposite is valid for the intuitive participants. The future research should be carried out in the organic setting.

In the Studies 1 to 4, we have investigated the cognitive styles of the participants making a personnel decision. We did not consider the cognitive style of a candidate, a person, applying for a position. Are intuitive or rational candidates preferred? Are intuitive and ra-

tional participants come along with each other? How do they work together? We consider these questions to have a very high importance for the Human Resources. The future research should investigate if rational and intuitive people work well with each other as a team, and if this work is effective.

Implications

Practical implications. Despite of the big amount of literature about the different methods in the personnel selection, studying their validity, too little have tried to explain their influence on the decision accuracy, and even less have spent time studying intuition in the personnel selection. Personnel managers select their employees by luck and intuition (Nowicki & Rosse, 2002). To sum up, intuition is assisting in case if apply it when working with papers than when making interpersonal decisions. Intuition might be used in order to reduce the information to be evaluated, e.g. when screening applications or resumes or handling with scores.

Theoretical Implications. The findings of this study support the previous results of the Studies 1, 2 and 3. Regarding information search, rational participants are likely to overestimate the controversial arguments, but not in the case when they are under time pressure and need to make a spontaneous decision. In this case, they are likely to view the information supporting their opinion. Intuitive participants were more likely to search for support of their opinion. This study has also investigated the preferences for learning styles of the participants with different cognitive styles. Rational participants were likely to use the Realistic Observation when obtaining new information. This might explain their preference for reading controversial information. Intuitive participants were more likely to apply Active Experimentation, and this might explain their selective information search.

CONCLUSION

Studies 3 and 4 continued investigation on the intuitive and rational decision making in different stages of the personnel selection. Intuitive decision makers were found to be better when handling with big amounts of partially missing, irrelevant information or handling scores of the standardized procedures. They also had higher preferences for cognitive bias and selecting the recommendations supporting their opinion then opposite to it. This could be explained by their learning style preferences – active and pragmatic. Looking for new things and implementing findings. Rational decision makers were more theoretical and looking for controversial information, except for the situations when under stress or forced to make a decision. In this case, similar to the intuitive participants, they also tend to search for consistent information.

CHAPTER 4

GROUP WORK EFFECTIVENESS OF RATIONAL, INTUITIVE AND HETEROGENEOUS GROUPS

In the present research we have studied group performance using groups that were either intuitive, rational, homogeneous or heterogeneous. Organisations are known to replace their traditional hierarchies with self-managing work teams (SMWTs) with the aim to improve the effectiveness of the whole organization (Manz & Sims, 1993; Lawler, Mohrman & Ledford, 1992). The question of the person-team fit is as important as the person-organization fit, especially due to this modern trend to work in teams. Successful team performance depends on whether the team members get along with each other or not. One of the central questions in the personnel selection is whether the future employee will suit the team, and if the team will be successful. Previous research has concentrated on many different aspects in order to improve the effectiveness of the working teams. In this study we have analyzed the cognitive style of group members, which is considered to be an important predictor of effective decision making (e.g. Armstrong & Priola, 2001). We have compared the teamwork of learning teams with different cognitive styles (intuitive versus rational homogeneous groups) and groups with both cognitive styles present. Intuitive groups evaluated their group performance significantly better than rational and heterogeneous groups. The results of the study revealed that intuitive groups have higher group cohesion and person-orientation than rational or heterogeneous groups.

INTRODUCTION

GROUP WORK SUCCESS OF INTUITIVE AND RATIONAL TEAMS

Ability to work in teams is one of the most important social skills in the organizational setting. One of the most effective criteria of successful teamwork is the evaluation of this work by the team members. It does not matter if you are working face-to-face with your team members or if you are a part of the virtual team: the group constitution is important. As long as there is just one disagreeable team member it can be enough to disrupt team performance (O'Neil et al., 1997). Study 5 investigates how intuitive, rational and mixed groups get along with each other. In the study of Armstrong and Priola (2001), intuitive groups were found to perform better than intuitive and heterogeneous groups. In this study we consider further factors important for the group performance, such as group cohesion, task performance, and orientation (person vs. structure). The participants of the study were groups of students in their first and second semesters of a semi-virtual program. For learning purposes, students work in groups and are supposed to implement many different tasks in diverse subjects, both virtually, and in onsite phases. They meet once every 2 months for a week. During this time they communicate intensely with each other, visit seminars and complete their projects and tasks. Between the onsite phases, students are free to decide when they meet each other, how often and how to structure their work on their learning tasks. Group work is expected in almost all the subjects (e.g. Marketing, Economics, English etc.). In our study, we asked the members of such learning groups to evaluate their group work on different aspects (group cohesion, task performance, objective orientation etc.), and to make a decision if they would like to stay as a group.

Performance in Self-Managing Teams

Self-Managing Working Teams (SMWTs), defined as “work groups that are formally organized into teams… and given responsibility and authority beyond that traditionally experienced by line workers” (Stewart & Manz, 1995, p. 749), seem to win their popularity in

organisations. Teams and not managers allocate working tasks and schedules, resolve their interpersonal and task problems and define how long they want to stay together as a group (Hackman & Oldham, 1976; Manz & Sims, 1993). Giving employees the feeling of control over their activities was found to improve productivity, motivation, quality and efficiency (e.g. Deci, Connell, & Tyan, 1990; Cohen & Ledford, 1994). At the same time, some studies reported between 80% and 90% of teams have difficulties with performance (Gabarro, 1987; Kuypers, Davies, & Hazewinkel, 1986). Quite a few studies researched the interaction of the individual characteristics and types of tasks within a team to influence team performance and effectiveness. For example, extraversion, conscientiousness (e.g. Barry & Stewart, 1997), or general cognitive ability (LePine et al., 1997; Barrick et al 1989) were found to be important for the overall group performance. For instance, Barrick et al (1989) have found conscientiousness, general cognitive ability, and extraversion were found to predict overall team performance ratings in manufacturing work teams, in case of independent member contribution to the outcome. Biased information search (Schulz-Hardt, Frey, Lüthgens & Moscovici, 2000; Schulz-Hardt, Jochims, Frey, 2002) and experience on the group performance (Brodbeck & Greitemeyer, 2000) are known to influence team performance as well.

Collective efficacy was also found to be related to indicators of team performance at both individual and group levels of analysis. Consistent with social cognitive theory, collective efficacy was a stronger predictor of team performance than team members' perceptions of their self-efficacy (Lent et al., 2005). The social cognitive theory explains how people acquire and maintain certain behavioral patterns, while also providing the basis for intervention strategies (Bandura, 1997). Such factors environment, people and behavior are constantly influencing each other. The way you describe your group is important for the overall group performance. Bandura (1997) defines collective efficacy as follows: "…group's shared beliefs in its conjoint capabilities to organize and execute the courses of action required to produce given levels of attainments" (p. 477). This definition refers to group members' aggregate be-

liefs about how they can perform *as a unit* (Lent et al., 2005). In this study we have asked groups about their opinion of their performance as a group. The self-evaluations of intuitive, rational and heterogeneous groups on the person and structure orientation, as well as group cohesion, responsibility taking, task accomplishment and objective orientation were investigated. When this survey was carried out, groups were working with each other for minimum half a year, and maximum a year.

Social-emotional activities, or person-orientation of the group were concerned with group solidarity and attraction between members. Task orientation was found to be related with goal attainment (Zaccaro, 1991, Zaccaro & Lowe, 1988). People, high in task orientation were likely to be poor in terms of the emotional support they give their group (Foot, 1982).We expect intuitive groups to be more person-oriented and rational groups – more task-oriented. Cohesion includes group interaction, individual perceptions about the closeness of the group, similarity and boding with the group as a whole (see Carron, Widmeyer & Brawley, 1985). Group cohesion was found to positively influence individual behaviors (e.g., adherence), affect (e.g., satisfaction, attitude), and cognitions (Carron, Hausenblas, & Mack, 1996). Group cohesion is especially important when working in the virtual environment. According to the previous findings (e.g. Armstrong & Priola, 2001), we expect intuitive homogeneous groups to have higher team cohesion than heterogeneous or rational homogeneous groups.

Another point important for the successful performance of the learning groups is the willingness to take responsibility. Many of the students are employed and their learning engagement depends on them being ready to take the responsibility. The other two aspects we would like to measure in this study are objective orientation and task accomplishment. These two aspects are especially important when the students meet each other during the presence phase. In this case, the participants of the group decide if they are likely to chat about their private things would like to concentrate on the learning purposes.

Intuitive and Rational Homogeneous versus Heterogeneous groups

Despite the fact, that heterogeneous groups have higher resource potential, which leads to better performance (e.g. Hoffmann, 1965), homogeneous groups are likely to stay together longer. Employee turnover is one of the factors of organizational success, and if you consider the recruitment costs, time spent to get into the tasks, and loss of expert knowledge. Jackson et al. (1991) have found turnover rate to be predicted by group heterogeneity. In case of internal recruitment, teams were likely to be homogeneous and similarity was found to influence the attractiveness of the group (see Sader, 1991). Intention to remain a member of a unit is considered a form of behavioral commitment (Mottaz, 1989) and has been shown to be directly related to actual turnover from organizations (Kraut, 1975; O'Reilly, Chatman, & Caldwell, 1991). Some heterogeneous teams may be able to stop their mutual work even before their first meeting. One of the questions this research addresses is whetherhomogeneous (intuitive versus rational groups) and heterogeneous groups prefer to stay as a group and how they evaluate mutual work. A bulk of studies on the heterogeneous and homogeneous groups as well as group performance was carried out. Some studies concentrated on such factors, as demographic diversity—culture, age, gender, race, and tenure (e.g., Jackson et al., 1991;Wagner, Pfeffer, & O'Reilly, 1984). Armstrong & Priola (2001) investigated group performance of the rational and intuitive homogeneous and heterogeneous groups. Where intuitive groups were found to be more successful than rational and heterogeneous groups. Based on the results of the research made by Armstrong & Priola (2001), we expect intuitive groups to be more effective than rational or heterogeneous groups.

The main task of the participants of this study is to learn. In this study, we would like to determine if the effective or ineffective group performance cannot be explained by the preferred learning style of the group members. According to the findings of the Study 4, we expect intuitive participants to have different learning style preferences than rational groups.

Present Research

Study 5 focuses on the question team performance of the intuitive, rational and mixed-up teams. Based on the results of the previous studies (e.g. Armstrong & Priola, 2001; Priola et. al, 2004), we expect the intuitive homogeneous groups to evaluate higher their group performance than heterogeneous or rational groups. Either you create a new team, or you select into a pre-existing team, team structure should be taken into account. We have considered cognitive styles of the group members. In order to evaluate collective efficacy of the team, we have asked the participants about their person versus structure orientation as a group. Other factors, like group coherence, willingness to take responsibility, goal-orientation and task performance were measured as well. These factors were found to explain the bad team performance (Beckhard, 1972; West, 1990). Questionnaire on Teamwork (Kauffeld & Frieling, 2001) was applied.

STUDY 5

Participants of the Study were students of the 1st and 2nd semester, with their majors in Economics, Business Psychology or Sport Management. Students have already worked for at least half a year (1st semester) or a year (2nd semester students) and have implemented different learning tasks together. For instance, to make a group presentation in the Marketing class, or solve a case study in Economics. Groups were also assigned to make some more complicated projects together. Students felt free to determine their schedule for group meetings. Every group has a name and a logo. In this survey, students were asked about their group name, but not about their own name. Due to this half-anonymous reply, we did not take the personal competence of the participants into account. Students were asked about their team performance. Cognitive and learning style was of the participants were measured as well. This investigation was carried out on-line.

METHOD

Participants and design. Participants in this study were 80 students (38 females and 42 males) of the University of Applied Management in Erding, Germany. Participants' age ranged between 17 to 42 years (M = 24.38, SD = 3.99). As a compensation for the participation in the survey, students received feedback about their learning style with the recommendation for the learning methods they should apply to improve their learning performance.

Procedure. Participants received an email from the university, asking to participate in the survey to find out if the group work is moving on well and to gather an overview about their learning preferences. Students were asked to complete the online questionnaire and answer the questions about their group work effectiveness in the virtual and in the presence phases, on their cognitive and learning style and answer the questions regarding different aspects of the group work.

Cognitive style measure. Similar to the studies 1 to 4, we used the Rational Experiential Inventory (REI; Epstein, 1996), a standardized questionnaire used to measure the preferences for the intuitive or rational cognitive style. REI measures individual preference for intuition, which is understood as a purely affective mode and not as a heuristic-affective mode (sees Epstein, 1996). Reliability analysis was made in SPSS and the reliability of the Faith in Intuition (FI) scale was above 0.80, and 0.90 for the Need for Cognition (NC), measured by Rational Experiential Inventory (REI; Keller et al., 2000). Cronbachs alpha of the scales from Questionnaire on Teamwork, received also using SPSS, were above .79 and are listed in the *Table 13*.

Cognitive style of the group. At the beginning of the research, the students were asked to write down the name of their group. After that they were assigned to fill in the REI to measure their cognitive style. The results were grouped together by names of the groups. The further investigation has shown the group composition, consisting of students with different or similar cognitive styles.

Table 13. Internal Consistency of the Scales and Subscales of the Questionnaire on Teamwork

(Sub-)Scale	Reliability
Person-orientation	.90
Structure-orientation	.95
Responsibility	.79
Cohesion	.91
Task Performance	.90
Goal Orientation	.91

Learning Style Measure. The Learning Style Inventory (Kolb, Osland & Rubin, 1995) consists of 24 items comprising single adjectives in six sets from which respondents are required to rank (1–4) according to the extent to which they feel the adjective applies to them. The four scales are concrete experience (CE), reflective observation (RO), abstract conceptualisation (AC) and active experimentation (AE).

Dependent measures. Questionnaire on Teamwork (Kauffeld & Frieling, 2001) was applied. Students were asked to evaluate their group effectiveness answering the questions on a 10-point scale. Such constructs as group cohesion, willingness to accept responsibility and task accomplishment, and objective orientation were measured.

RESULTS

Significant difference was found in the evaluation of the team performance and the intuitive style of the group. Age and sex of the participants had no effect on the dependent variable nor were there any significant interactions and are not considered further.

Learning styles. Significant correlation was found between the following learning styles: AC and CE ($\underline{r}$ = -.665) and AE and RO ($\underline{r}$ = -.608), but also RO and AC ($\underline{r}$ = -.236), as

well as RO and AE (r = -.608). The findings do not support the idea of two bipolar dimensions (see Yahya, 1998) and replicate the findings of the Study 4. This means that the two bipolar dimensions of learning style are not virtually orthogonal. The preference for one learning style (e.g. Active Experimentation) excludes the learning preference for some others (e.g. Realistic Observation. Despite the previous findings (e.g. Sadler-Smith et al., 2001) and supporting the results of the Study 4, no interaction was found between learning style preferences and gender.

Table 14. Correlations of the Subscales of Learning Style Inventory

Subscale	CE	RO	AC	AE
CE	1.000	-.080	-.665**	-.361*
RO	-.080	1.000	-.236*	-.608*
AC	-.665**	-.236*	1.000	.133
AE	-.361**	-.608**	.133	1.000

NOTE. CE = Concrete Experience, RO = Realistic Observation, AC = Abstract Conceptualizing, AE = Active Experience.

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Cognitive styles and learning styles. Repeated Measures procedure was used in SPSS to test the hypothesis if there are any differences in the learning style preferences of intuitive and rational people. The learning by cognitive style interaction effect was significant F (3, 234) = 13.690, p = .000, η^2 = .149. Main effect of learning style was significant F (3, 234) = = 7.571, p = .000, η^2 = .088. The main effect of cognitive style was not significant F (1,

234) = 0.97, $\underline{p}$ = .075, $\underline{\eta^2}$ = .001. In sum, participants with rational cognitive style were more likely to prefer the AC (Abstract Conceptualization) and RO (Realistic Observation) learning styles. Participants with the intuitive cognitive style were likely to choose AE (Active Experimentation) and CE (Concrete Experience) learning styles. Means and standard deviations are listed in the *Table 15* and can be seen in the *Figure 12*.

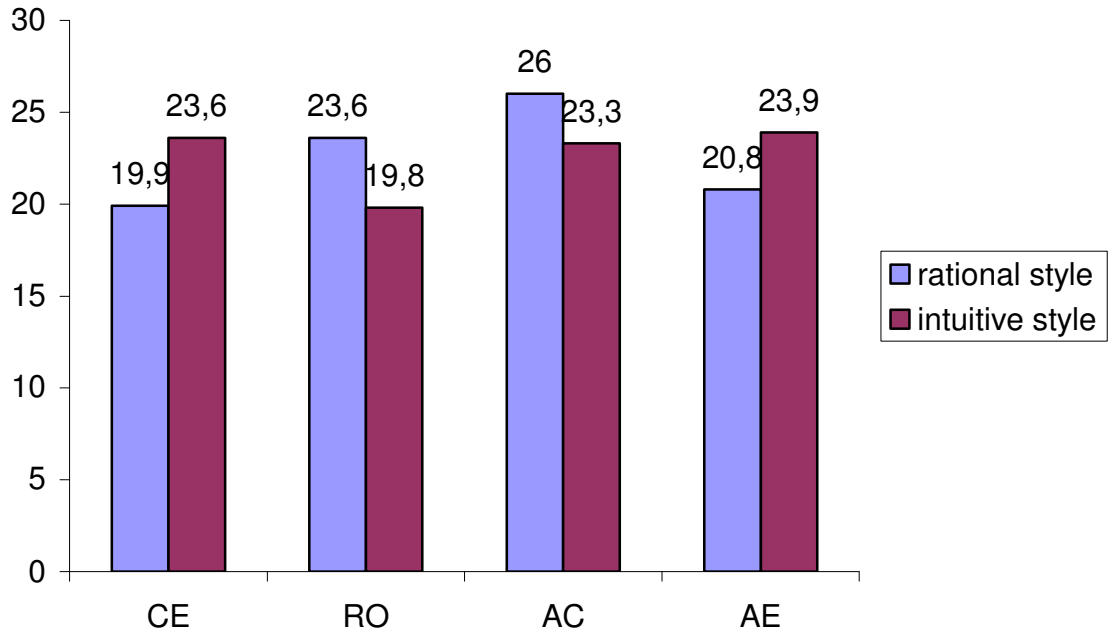
Table 15. Means and standard deviations for the learning style preferences

	Cognitive Style					
Scale	rational			intuitive		
	M	*SD*	*N*	*M*	*SD*	*N*
CE	19.95*	4.50	54	23.62*	3.23	26
RO	23.62*	3.50	54	19.76*	3.82	26
AC	26.00*	3.54	54	23.27*	3.28	26
AE	20.81*	3.70	54	23.88*	3.92	26

NOTE: CE = Concrete Experience, RO = Realistic Observation, AC = Abstract Conceptualizing, AE = Active Experience.

* The mean difference is significant at the .05 level.

Figure 12. Learning style preferences of intuitive and rational participants



Cognitive styles and team work. Repeated Measures procedure in SPSS was used to test if there is any interaction effects between homogeneous (intuitive and rational) and heterogeneous groups in their evaluation of the group work. Interaction effect of group composition by the evaluation of the team work (cohesion, willingness to accept responsibility, task accomplishment, objective orientation) was significant $\underline{F}(6, 231) = 4.482$, $\underline{p} = .000$, $\underline{\eta^2} = .104$. The main effects for cognitive style was also significant $\underline{F}(2, 77) =$ $= .15.036$, $\underline{p} = .000$, $\underline{\eta^2} = .281$, and the main effect of the team performance was significant $\underline{F}(3, 231) = 52.620$, $\underline{p} = .000$, $\underline{\eta^2} = .406$. Means and standard deviations are presented in the Table 16. Post-Hoc Test revealed significant differences between the groups.

Group cohesion received the highest evaluations, especially by the intuitive group ($\underline{M} = 8.36$, $\underline{SD} = .872$). Homogenous intuitive groups evaluated their team cohesion significantly better than rational ($\underline{M} = 7.56$, $\underline{SD} = 1.407$) and heterogeneous groups, ($\underline{M} = 5.17$, $\underline{SD} = 2.575$, $\underline{p} <$ $< .05$).

There was no significant difference found in the evaluation of the other team work aspects between the intuitive homogenous and heterogeneous groups. Rational groups evaluated their team work significantly worse.

Table 16. Means of the Team Performance Evaluation

	Cognitive Style					
Scale	rational		intuitive		heterogeneous	
	M	*SD*	*M*	*SD*	*M*	*SD*
COH	5.165	2.575	8.357	.872	7.558	1.407
RES	4.552	2.304	6.410	1.668	6.101	1.759
OBJ	3.664	2.246	5.833	.919	5.463	1.384
TASK	3.500	2.822	7.053	1.201	6.563	1.934
P-O	9.717	4.471	14.767	2.413	13.659	2.788
S-O	7.164	4.977	12.886	1.956	12.026	3.199

NOTE: COH = Cohesion, RES = Responsibility, OBJ = Objective Orientation, TASK = Task Accomplishment, P-O = Person Orientation, S -O = Structure Orientation.

Willingness to take Responsibility. No significant difference was found in the willingness to take responsibility between the intuitive homogeneous (M = 6.41, SD = 1.668)

and heterogeneous groups (M = 6.10, SD = 1.759, p > .05). Rational groups have evaluated their group's willingness to take responsibility significantly worse (M = 4.55, SD = 2.304, p < <.05).

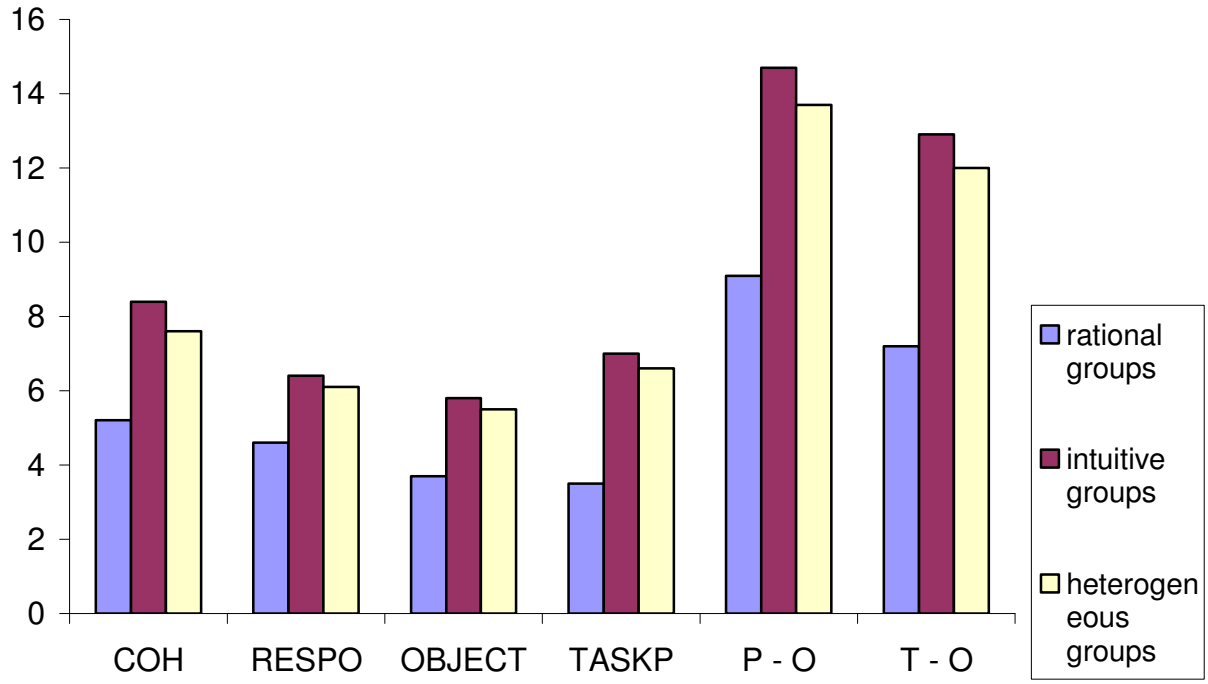
Objective Orientation. Rational groups (M = 3.66, SD = 2.246) have judged their objective orientation significantly worse than intuitive (M = 5.88, SD = .919, p < .05) and heterogeneous groups (M = 5.46, SD = 1.668, p < .05). The difference between intuitive and heterogeneous groups did not reach significance.

Task Accomplishment. Intuitive groups (M = 7.05, SD = 1.201) reported the highest task accomplishment, heterogeneous groups slightly less (M = 6.56, SD = 1.934, p > .05) and rational groups significantly less (M = 3.50, SD = 2.822, p < .05) than both other groups.

Person-Orientation versus Structure-Orientation. Intuitive homogenous (M = 14.76, SD = = 2.413) and heterogenous groups (M = 13.69, SD = 2.788) were found to be significantly more person-oriented than rational groups (M = 9.71, SD = 4.471, p < 0.05). Intuitive group being slightly better than heterogenous, but this difference did not reach significance (p > > .05). Rational groups (M = 7.16, SD = 4.977, p < 0.05) had lower scores in the Structure Orientation than intuitive (M = 12.88, SD = 1.956) and heterogenous (M = 12.02, SD = = 3.199, p > .05) groups. No significant difference was found between the latter two groups.

Wish to remain in the group. The evaluation of the team performance explains the wish to stay or leave the group: participants of the intuitive groups wished to remain in the same group. Less than a half of the rational groups (42%) reported the same. Heterogeneous groups took the place in the middle (78%) of the heterogenous groups wished to remain in the same group. Chi-Square Test was run in SPSS to test the difference between the groups. The results showed that this difference was significant $\chi 2$ (2) = 14.165, p = .001.

Figure 13. Team performance evaluation of intuitive, rational and heterogeneous groups



GENERAL DISCUSSION

Successful team composition is a challenge for personnel selection practitioners. The main question is what kinds of teams are preferred: homogeneous or heterogeneous? Homogeneous teams reduce organizational turnover and consist of similar people. It means they are attractive to the people working together. Heterogeneous groups are known to increase performance effectiveness and serve as an attrition to the candidates. The results of this study have shown that even one factor, like cognitive style of the group participants, makes a big difference in the evaluation of their evaluation of their team work. In sum, the results of this study support the findings recommending teams with members who have different cognitive styles (Foot, 1982). Heterogeneous groups evaluated their performance significantly better than rational homogeneous groups and not worse than intuitive groups. Most participants (app. 80%) wished to remain in the same group. According to the Kolb's Learning Style Inventory, intuitive and rational participants have different learning styles. Intuitive learners prefer Concrete Experience and Active Experimentation. Rational learners are likely to select Realistic Observation and Abstract Conceptualisation. The combination of all the learning styles in the group for the learning purpose might help participants to manage them with ease. It is true that if differences are accepted and used in the very best way by the participants. Some studies have really found that group composition of members with different cognitive styles leads to personality difficulties within groups (Reddy & Byrnes, 1972).

In the study of Armstrong & Priola (2001), intuitive participants were most likely to be selected as leaders, both in the intuitive and heterogeneous groups. This might explain the success of the heterogenous groups in this setting. In our research, we could not test this hypothesis, since there were no official group leaders in these groups.

In sum, heterogeneous groups have reported successful team performance. However, intuitive homogeneous groups were better. Study 5 replicated the findings of Armstrong & Priola (2001) that the intuitive homogenous groups were more person-oriented than rational

groups and, at the same time, also very task-oriented. Task oriented people determine the group selection and set goals, as long as person-oriented people focus on the relationship among the group members (Kauffeld & Frieling, 2001). Rational participants reported lower level of person-orientation. This means that intuitive team players are more likely to show solidarity, empathy and attraction to other members. Intuitive members are likely to engage more in their group work than rational. Rational groups have more difficulties in working with each other and are likely to leave their groups.

One dimension where intuitive homogeneous groups received the highest scores was group cohesion. Cohesion includes group interaction and individual perceptions about the closeness of the group, similarity and boding with the group as a whole (e.g. Caron, Widmeyer & Brawley, 1998 etc.). This factor is especially important for virtual teams. In our situation, the ability to keep in touch between the onsite phases means successful overall performance. The high scores on group cohesion might explain that intuitive participants wish to remain in the same group.

Our study was carried out in the natural setting, which was an adaptation of the recent study by Priola et al. (2004) where team effectiveness was tested in the laboratory (mechanic setting). The results looked totally different. Rational group solved their task successfully. They did not engage into the interpersonal relationship matters. Intuitive group spent much more time on interpersonal issues and heterogeneous group reported communication difficulties. This means that for a short period of time, and in the mechanic setting, rational groups should be preferred. The present study was carried out in the organic, natural setting. Students had quite flexible working conditions and were working with each other for a long period of time. Similar to Priola et al. (2004), we support the opinion that environment should be taken into account not only for the experimental purposes but for the successful team combinations as well.

As mentioned above, Study 5 has repeated investigation on the preferences for the learning styles among the students with different cognitive styles. In sum, results of Study 5 replicated the results of Study 4: Rational participants were likely to choose the Abstract Conceptualization Learning style and Realistic Observation, which means that such people are more theorists than practitioners, searching for relationships between some actions Kolb (1985). Intuitive participants have chosen Concrete Experience and Active Experimentation, which indicate that they are more pragmatic, investigating, and, in general, more balanced than rational team members. There was no relationship found between the learning style and the overall evaluation of the team work.

In sum, the results of this study revealed intuitive homogeneous and heterogeneous groups to be more effective than rational groups. Both, intuitive and heterogeneous groups evaluated their group performance in all the aspects much better than homogeneous rational groups. Intuitive groups reported higher group cohesion than heterogeneous and rational groups and were more likely to remain in their groups. The results support the findings of the previous research.

Limitations

The survey was carried out on the internet, and, despite the fact that all the participants were used to learning online, there might still have been some troubles understanding the questions. We also did not consider objective level of competence of the group and of the group members. The future research should concentrate not only on the subjective performance evaluation, but also on the objective task performance in different subjects.

For the objective purposes, we could not ask about the information group leader and did not test the hypothesis that the intuitive members are likely to be selected as group leaders. We consider this point very important for the future research as long as it has a value for the selection of managers. It is also recommended to replicate this study in the laboratory set-

ting, when participants are given a selected task and have to solve it during a shorter time period.

Implications

Despite of the large amount of literature about group work, team performance, team diagnosis etc., there is still very little research on the cognitive preferences of team members. Despite this fact, we consider the findings of the Study 5 to be of more practical than theoretical relevance. First, managers and Human Resource should consider the cognitive style of the group members when making personnel selection decisions.Second, organizational setting is to be taken into account. In cases where this setting is natural and not over structured, intuitive and heterogeneous groups are recommended. For virtual team work, intuitive teams are even better, as long as they are likely to feel as a group even when not working face-to-face with each other. Heterogeneous groups did not perform any worse than intuitive homogeneous groups, and intuitive groups wish to remain in the same group. They are especially recommended in the situations when different combinations of the learning styles are needed to solve the tasks.

CONCLUSION

In the Studies 1 to 4, personnel decisions made by the participants were tested with different cognitive styles. Participants were asked to select the best candidate based on his resume and recommendations (Study 1). The candidates had to be evaluated after the structured interview (Study 2) or after the group discussion during the Assessment Center (Study 4). Participants also had the possibility to decide using the scored of the candidates achieved during the Assessment Center (Study 3). The results of the first four studies revealed that the intuitive cognitive style was very successful in situations when working with scores and analyzing resumes. This finding supports opinions of the organizational practitioners (Agor, 1989 etc.). At the same time, intuitive interpersonal judgment was significantly worse than rational. This finding supports the recommendations of many organizational psychologists to use standardized methods (e.g. personality tests and structured interviews). One explanation of these findings is that intuitive participants have a higher confirmation-bias than rational participants, which was found to influence negatively successful decision making (e.g. Kray & Galinski, 2003). For organizations, it is still far worse to select the false person than not to select the right person (Schuler, 2001). When intuitive participants preferred one candidate over another, they made substantial errors in the evaluation of personality traits. Also, when reading recommendations supporting their opinion about the preferred candidate, they were more likely to read them than the opposite ones. Rational participants were more likely to read the alternative opinions about the candidates to get a whole picture of the candidate as a person. We have tried to explain these findings by measuring learning style preferences of the participants. Rational participants were significantly better than intuitive in the Realistic Observation, as long as intuitive ones preferred Active Experimentation and Concrete Experience. This means that intuitive participants are more pragmatic and wish to try something new, but are not necessarily good in observation, which is substantial for the interpersonal judgment. Their strengths lie in searching for new things and implementing new things. Rational deci-

sion makers were more theoretical and are looking for controversial information, with no preferences for confirmation bias when making decisions.

In the Study 5, we have measured the performance evaluation of groups with rational and intuitive cognitive styles in the organic setting. The findings supported the results of the previous studies that intuitive groups are more successful when working in the natural conditions. Intuitive members come along with each other and don't report difficulties even when working in the virtual environment. Heterogeneous groups reported no difficulties in the mutual work or communication with each other.

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Curriculum Vitae

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