Human Resource Management Review 25 (2015) 38–46

Contents lists available at ScienceDirect

Human Resource Management Review

journal homepage: www.elsevier.com/locate/humres

Contextualizing intelligence in assessment: The next step ☆

Symen A. Brouwers [a,*], Fons J.R. van de Vijver [b,c,d]

[a] NCCR LIVES, University of Zürich, Zurich, Switzerland
[b] Tilburg University, Tilburg, The Netherlands
[c] North-West University, Potchefstroom, South Africa
[d] University of Queensland, St. Lucia, QLD, Australia

ARTICLE INFO

Keywords:
Assessment
Context
Culture
Intelligence
Job analysis

ABSTRACT

Intelligence theory and assessment in HR and I/O contexts are unlikely to make major advancements when intelligence continues to be treated as a decontextualized set of skills. Models of cognitive style, situated cognition, and practical intelligence present a more contextualized view of intelligence, but are either too broad or too embedded in context to guide HR and I/O assessment. We propose a new model that draws a closer link between cognition and context; the model builds on recent developments in cross-cultural personality research, where decontextualized and contextualized models are combined. We propose an assessment procedure in which social and cognitive characteristics of job situations are simulated, a method we label Controlled Situated Assessment. In order to be successful at the task, individuals need many different resources, cognitive skills, communication skills, and personality. By increasing the ecological validity of the tasks, we expect a higher predictive validity, as compared to decontextualized assessments of intelligence.

1. Introduction

The gap between individual scores on an intelligence test and actual ability or potential in solving everyday tasks has been a theme in the research on psychological assessment for the better part of the last 40 years. Although the issue has been mainly studied in the field of cross-cultural psychology by examining the validity of intelligence tests across different cultures (e.g., Sternberg, 2004), it bears directly on HR and I/O psychology. On the one hand, HR and I/O psychology have a strong tradition of decontextualized assessment, dealing with intelligence and personality. On the other hand, HR and I/O psychology have a strong history in the application of contextualized assessment methods such as assessment centers, interviews, and simulations. Decontextualized approaches do not help to identify the specific elements that contribute to success in particular jobs or domains of life (e.g., Hunt, 2011). For example, many would agree that Bill Gates is highly successful, but an intelligence test would probably not have helped to predict his success in life. We describe an approach here that tries to reduce the gap between HR and I/O assessment and job performance by contextualizing the constructs being assessed. For example, rather than a general assessment of an applicant's communication skills, we propose to make a detailed analysis of the communication skills required for this applicant and to use an assessment procedure that closely resembles the communication skills to be used on the job.

In the present paper we describe prevailing models of intelligence and discuss how they relate to this differentiation in the meaning of intelligence across work settings. We conclude from this overview that a more contextualized view on intelligence comes closer to

☆ This publication results from research work of the first author within the framework of the Swiss National Centre of Competence in Research LIVES, and is financed by the Swiss National Science Foundation. The authors are grateful to the Swiss National Science Foundation for its financial support.

* Corresponding author.
E-mail address: symenbrouwers@gmail.com (S.A. Brouwers).

http://dx.doi.org/10.1016/j.hrmr.2014.09.006
1053-4822/

capturing complex variations in intelligence and has the potential to generate higher predictive validity coefficients. We then use the contextualized view as a starting point for our own model that draws a closer link between cognition and context/culture and an assessment method that uses context to simulate interactions in working contexts, an approach we label Controlled Situated Assessment (CSA).

1.1. Decontextualized models of intelligence

Intelligence research and assessment have come a very long way since the work by Sir Francis Galton and Alfred Binet. Models of intelligence have become more detailed and now include different components of intellectual ability. Still, the overriding definition of what intelligence is has remained fairly stable over time. We review this definition and pay particular attention to the Cattell–Horn–Carroll model of intelligence (CHC model). Having its roots in differential psychology, the traditional and most popular definition of intelligence has an implicit emphasis on decontextualized skills. Intelligence, often captured in a single IQ score, measures the ability to perform well across many different settings. The correlational way in which intelligence is analyzed supports the idea that people who do well in one particular setting do well in other settings too.

The CHC model is an integration of the models by Cattell (1943), Horn and Cattell (1966) and Carroll (1993). The models by Cattell and Horn had two dimensions of intelligence, namely fluid and crystallized intelligence. Fluid intelligence is the ability to process, classify, and transform novel information into something new. Inductive and deductive reasoning are prime examples of fluid intelligence. Crystallized intelligence is generally regarded the product of fluid intelligence and comprises habits, conclusions and knowledge stored in memory, allowing people to rely on existing data in a specific setting. Carroll later expanded this model, by including not only fluid and crystallized intelligence, but by capturing skills in areas as varied as reasoning, knowledge, visual and auditory perception memory, ideation, and general cognitive speediness in a single concept of general intelligence or *g*. Characteristic of this model of intelligence is the idea that intellectual skills, notably reasoning, are required in many everyday situations and that more skilled persons can on average better cope with the many job situations that involve reasoning. The same idea is also found in the radex models of Ackerman (1992) and Snow, Kyllonen, and Marshalek (1984). In such models, domains of intelligence are structured in concentric circles centered around a set of basic processes, with processes on the rings extending outward gradually less broad and more specialized.

The main reason for the popularity of such decontextualized intelligence models lies undoubtedly in their success of predicting school and job outcomes. Taken across multiple samples and contexts of application, broader dimensions are likely to show more predictive validity than the more specialized skills. By the same token, general intelligence comes out as the best predictor in meta-analyses; by aggregating scores from many different data sets, general intelligence, as the most decontextualized concept, will fare the best. Unless situational moderators are modeled, the broadest intellectual skills are very likely to have the best predictive validity of all the decontextualized abilities that are studied.

From a conceptual perspective, however, the huge popularity of decontextualized models of intelligence is surprising, given the fact that all cognitive processes take place in a cultural context (Cole, 1996; Gigerenzer, Todd, & The ABC Research Group, 1999) and that most cognitive processes are subject to learning and development (Anderson, 1987; Li, 2007). Variability in the level of fluid and crystalized intelligence during practice for the game Go (Masunaga & Horn, 2001), variability across the lifespan (McArdle, Ferrer-Caja, Hamagami, & Woodcock, 2002), and decreases in the speed of visual discrimination with ongoing practice (Fleishman & Hempel, 1955) are just a few examples to demonstrate that the level and form of intellectual abilities are shaped by experiences, which in turn are influenced by their cultural context. We suggest that intelligence theory and assessment, including HR and I/O assessment, will not make significant advancements if intelligence continues to be treated in a decontextualized manner and that we can make significant progress by "letting context in."

2. Models of intelligence and context

A number of contextualized models of cognitive functioning have been developed and tested in the last four decades. We review examples from this history, starting with Witkin's cognitive style, followed by a description of situated cognition and practical intelligence. We conclude that each of these models has problems that inhibit their widespread acceptance by HR and I/O researchers.

2.1. Cognitive style

Cognitive styles are broad patterns in the way people process information, influenced by the way a cultural community occupies its ecological habitat. One example of cognitive style that was proposed is field-dependence/field-independence (e.g., Witkin, Goodenough, & Oltman, 1979). "The construct refers to the extent to which an individual typically relies upon or accepts the physical or social environment as given, in contrast to working on it, for example by analyzing or restructuring it" (Berry, Poortinga, Breugelmans, Chasiotis, & Sam, 2011, p. 145). Research with villagers and Pygmy hunter-gathers in Central-Africa and different indigenous groups in Canada showed that hunter-gatherers are more field-independent than farmers. Although later studies, involving culturally closer hunter-gatherers and farmers, could not fully replicate the original findings (Berry et al., 1986), the cognitive style tradition clearly shows how intellectual abilities are influenced by their cultural context.

Cognitive style left its mark outside cross-cultural psychology. For example, Stanovich and West (2000) described individual differences in reasoning in terms of two systems of thought, one labeled interactional and the other analytic. The analytic system is what we know as general intelligence. The interactional system is much more contextualized though, not placing large demands on cognitive capacity and working relatively fast. Each system leads to different task construals, but the exact implications of