



Subject-Specific Competencies in Higher Education

Modeling and measuring subject-specific competencies in business administration in the German National Educational Panel Study (NEPS)

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What is the content and the structure of subject-specific competencies? How do they develop in the interplay of individual and environmental factors? Which consequences do they have for the professional career?

These are some of the main research questions addressed by the sub-study 'Higher education and the transition to work' of the German National Educational Panel Study (NEPS). We start measuring subject-specific competencies in two subject areas, business administration and teacher education. The test for measuring business administration competencies is being developed by the sub-study for application at the end of the bachelor study program.

Expert interviews and discussions

With the aims of ensuring curricular validity of the test and finding an adequate test design we conducted 20 interviews and held additional discussions with experts in the field of business administration and economics.

The most important results:

Most experts considered problem solving competencies to be very important. According to them, problem solving includes the ability to structure a given problem, to relate it to the context, to identify and find the appropriate resources for getting further information and to develop strategies for decision making even under uncertain conditions.

Many experts also emphasized the relevance of subject-specifically shaped generic competencies such as social and personal competencies (e. g., combined in "leadership competence"). However, according to the experts, the possibilities of teaching these competencies – alongside or together with specialized knowledge – are very limited within a bachelor program.

As regards the test design, discussions led to the following conclusion:

If the test is meant to measure more than factual knowledge, test tasks have to be contextualized. They should refer to realistic problems and use authentic documents (e. g., balance sheets, annual reports).

It was recommended to design a holistic, process-oriented test instead of addressing particular subdomains of business administration separately.

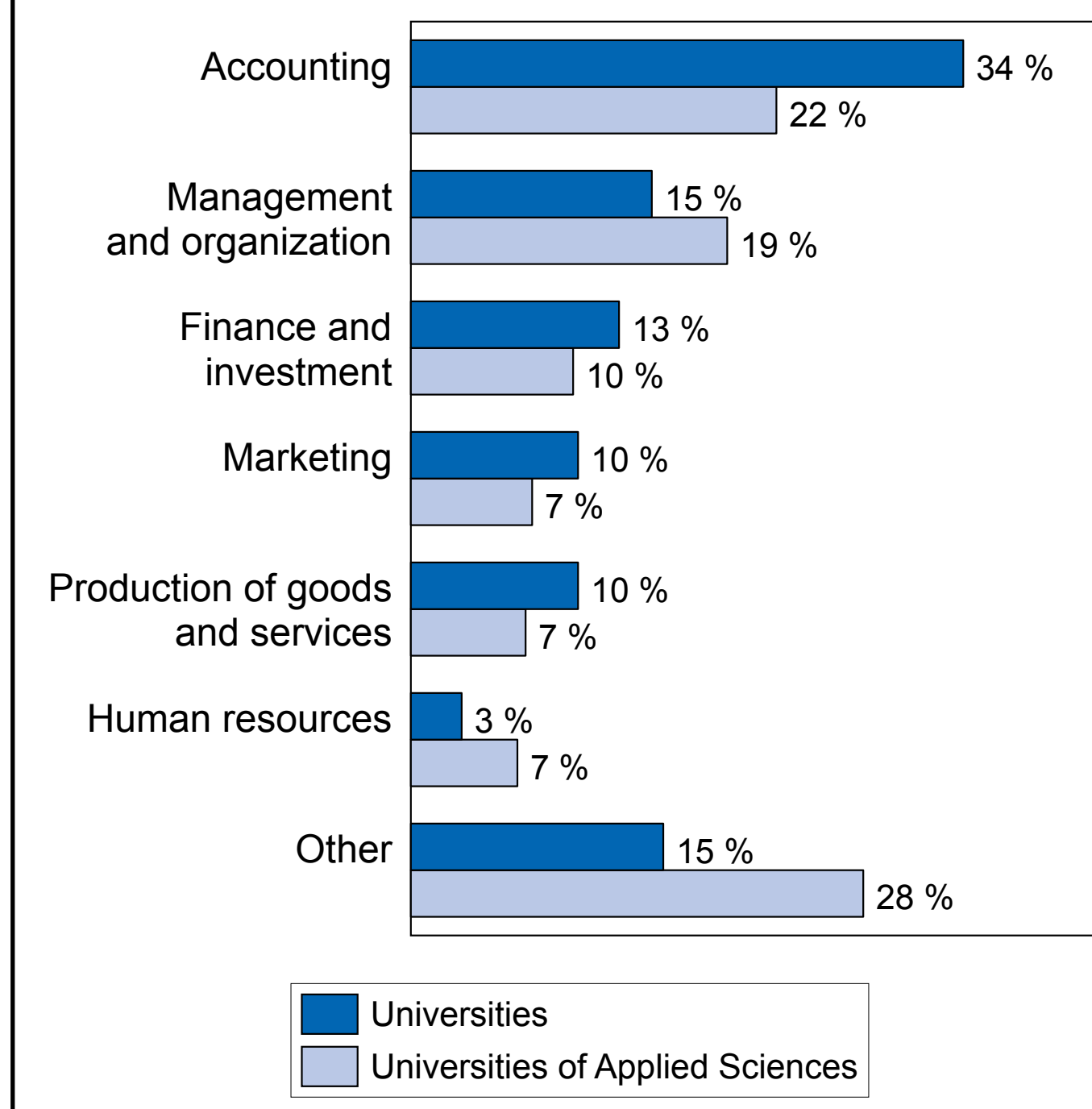
Curricular analysis

In order to ensure curricular validity, we also analyzed module descriptions of 26 bachelor degree courses of universities and universities of applied sciences. The curricular analysis also served the purpose of identifying subdomains that should be covered by the test.

Some selected findings from the curricular analysis:

On average the percentage of compulsory courses in business administration amounts to 29 % of the study program. The rest of the degree program consists of mandatory courses in other subjects, e. g., mathematics, statistics, law, and information systems, or optional specialized courses in business administration.

Percentage distribution of subdomains in the core curriculum (compulsory courses in business administration)



Within this core curriculum "accounting", "management and organization", "finance and investment", and "marketing" are the major subdomains.

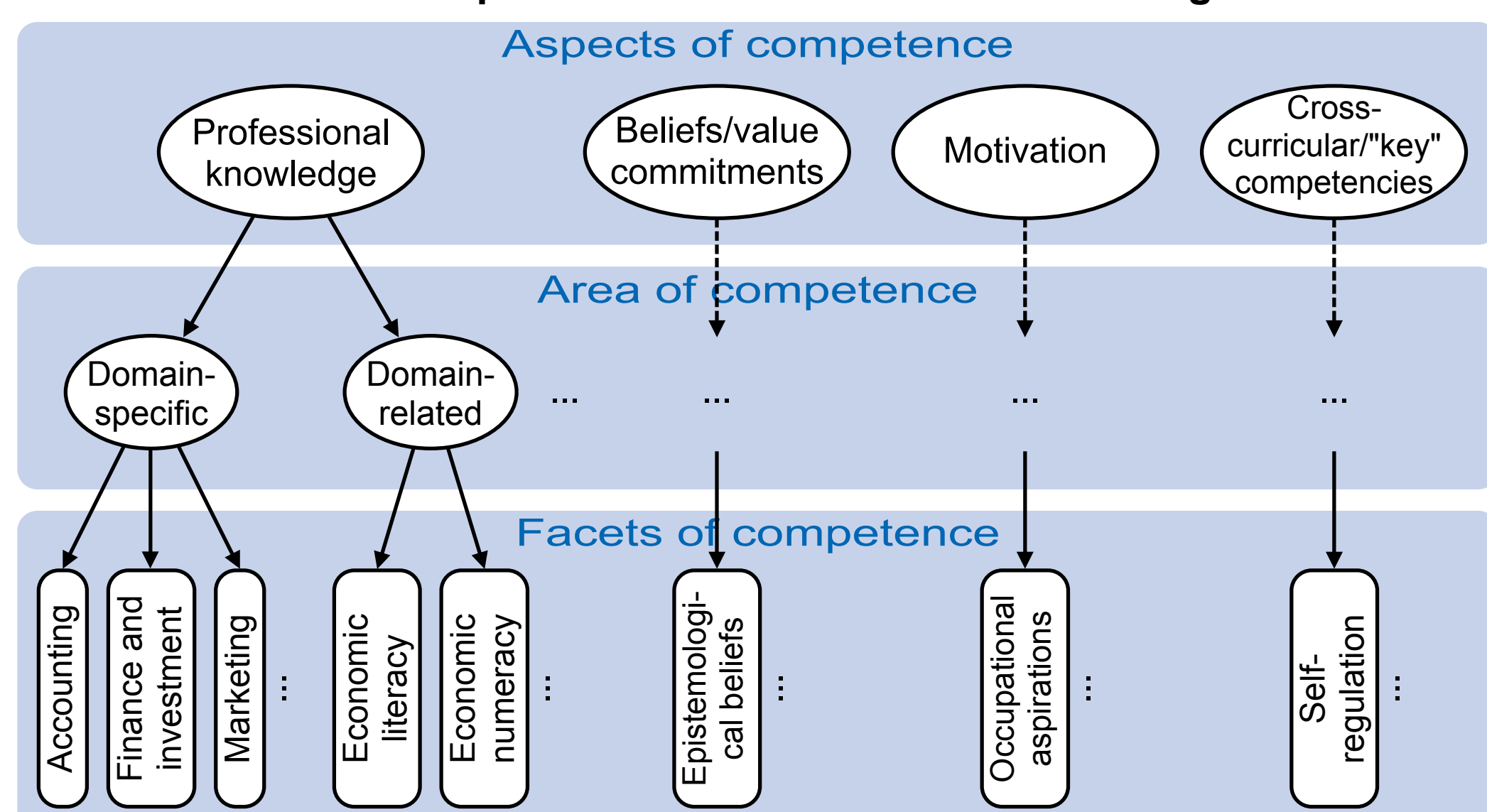
It is intended to design the test as a simulation of a typical work situation in a realistic business environment (see instruction in the middle of the circle). Therefore, authentic documents like balance sheets and annual reports will be available throughout the test.

The test tasks are conceptualized as holistic problems and focus on the subdomains "accounting/cost accounting", "finance and investment", and "marketing".

Concept of competence

Following Weinert (2001), we take a broad view and refer to competence as "combinations of those cognitive, motivational, moral, and social skills available to (or potentially learnable by) a person [...] that underlie the successful mastery through appropriate understanding and actions of a range of demands, tasks, problems, and goals."

Professional competence of business administration graduates



following Baumert & Kunter 2006; Bauer et al. 2010; Winther 2010

The business administration test will focus on the assessment of domain-specific cognitive aspects of competence.

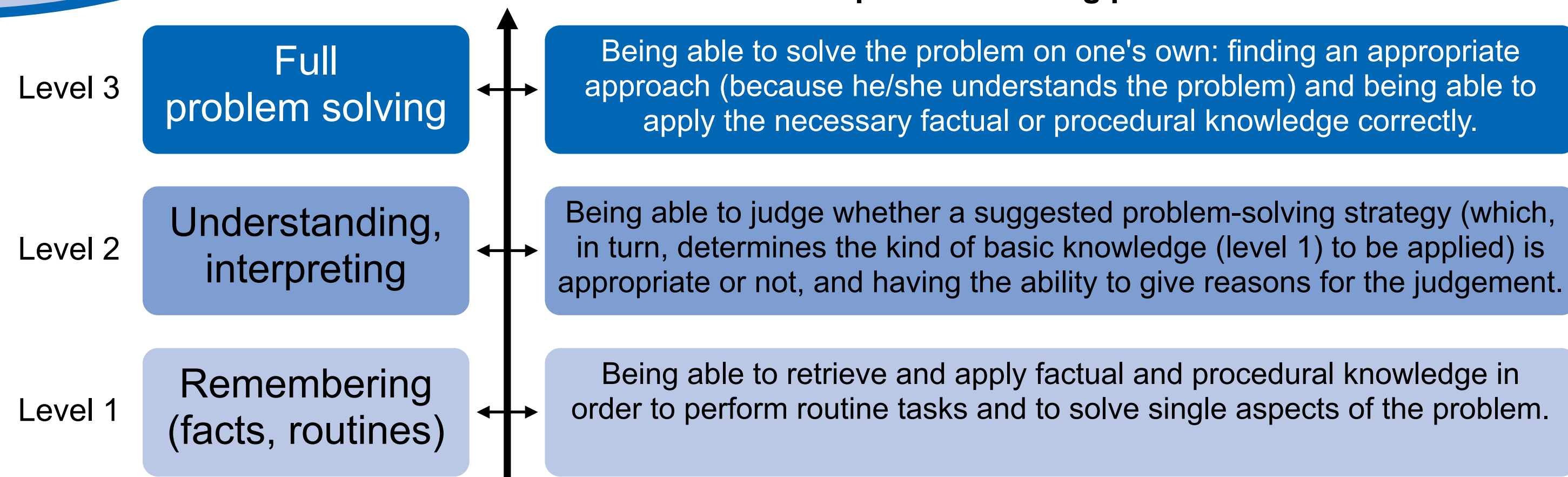
Other facets like occupational aspirations and self-regulation will be assessed separately. Thus, interactions between different aspects of competence can be examined.

Levels of competence

According to a well-established definition, problem solving refers to higher-order cognitive processes and to goal-oriented thinking and acting in situations where no routines are available for mastering the situation and where the solution path is not immediately obvious (cf. Mayer 1992; Baumert et al. 1999).

Because domain-specific knowledge is required not only for solving a problem but also for recognizing and understanding new problems (cf. Pretz, Naples & Sternberg 2003), "remembering" constitutes the basic level in our model.

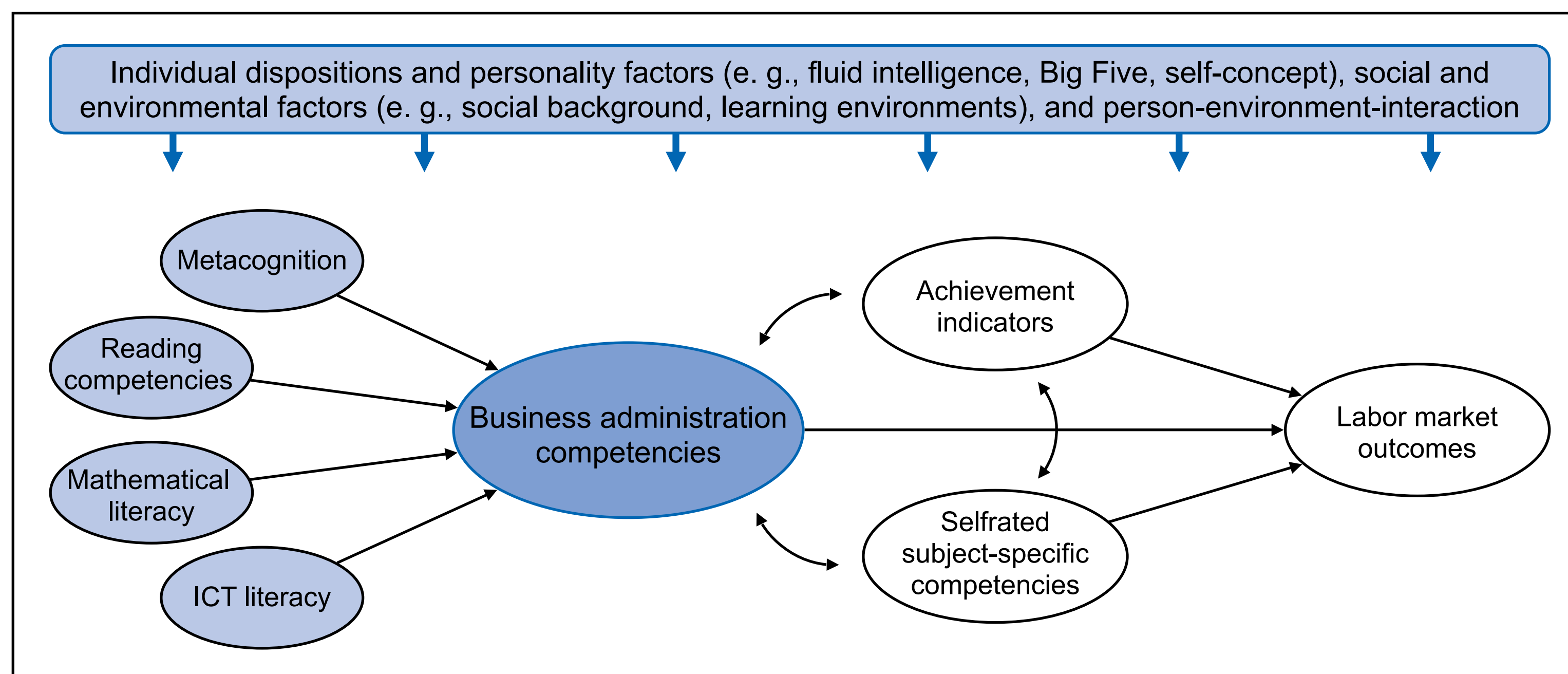
Constituents of the problem-solving process



Business administration competencies: predictors, correlates, effects

The longitudinal design and the range of competencies addressed in the NEPS make it possible to examine the impact of generic, non-cognitive and other cognitive competencies on subject-specific competencies in business administration.

Metacognition and ICT literacy are expected to have an overall effect on the test performance. Test results are also assumed to vary upon mathematical literacy and reading competence: The degree to which task performance will be influenced by mathematical literacy depends on how far mathematical-analytical concepts and operations are needed. Correspondingly, reading competencies will be the more important, the higher the amount and complexity of information given in the task description.



Academic achievement indicators (e. g., grades) can be used to validate the business administration test; the results of the business administration test, in turn, can be used to test the validity of selfrated subject-specific competencies.

Test scores should correlate positively with achievement indicators and selfrated competencies. It is expected that the degree of correlation will vary between individuals and subgroups and that several personal and environmental factors, which are also assessed in the NEPS, could help explain these differences. After completion of the study program the effect of subject-specific competencies on labor market outcomes can be analyzed and compared with the effects of other predictors, especially achievement indicators.

Reading competencies
Mathematical literacy
Achievement indicators
Procedural metacognition

Selfrated subject-specific
competencies
Achievement indicators

Fluid intelligence
ICT literacy
Declarative metacognition

Selfrated subject-specific
competencies
Achievement indicators

Business administration
competencies

Spring 2011

Autumn 2011

Spring 2012

Autumn 2012

Spring 2013

Autumn 2013

Spring 2014

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