

Title: Gender differences in patterns of knowledge.
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The overall purpose of this thesis is to study gender differences in patterns of knowledge. Knowledge is given a broad definition to emphasise a socio-cultural perspective and to enable the building of bridges between research traditions. The dissertation comprises three separate studies, which have been previously published, and an integrative essay. In the latter, the research approach and results are described and elaborated upon from different theoretical, methodological, and feminist perspectives. Moreover, controversies and paradoxes in the history of educational measurement and research on gender differences are discussed. In the final section of the essay the usefulness of quantitative research approaches for the understanding of gender differences, is discussed in the light of feminist critique.

The core assumption for the studies is that "knowledge" in whatever form it appears, is always complex, and that observable variability may be analysed in terms of structural patterns – patterns of knowledge.

The first two empirical studies utilise performance scores from 13 different cognitive ability tests and from standardised achievement tests in mathematics, Swedish and English. The data was collected in 1980 and comprised all 12-year old students in grade 6 in two communities. The third study utilises performance scores from Document reading tasks, selected from the 1990/1991 IEA Reading Literacy study. This analyses comprised 9-year-olds and 14-year-olds, in representative samples from 25 and 22 countries respectively. In order to reveal latent patterns, a multivariate hierarchical approach was adopted for all three studies, with the aid of structural equation modelling.

The first study revealed a similar latent structure of ability dimensions for boys and girls. However, despite almost equal observed performance, substantial gender differences were found in the latent dimensions of cognitive abilities. The girls showed higher levels on general analytical and verbal-educational dimensions, whilst the boys showed higher levels on a general spatial dimension, and on several narrow dimensions related to verbal, numerical and spatial content. Variability differences were found on spatial dimensions only, where the spread was wider in the male group.

In the second study, the results from the first study were further investigated in an analysis of the impact of missing data. In a multivariate analysis where the test scores from boys and girls lacking data on the three standardised tests were included, the pattern of gender differences on latent dimensions changed. The girls advantage on the analytic dimension increased, while their advantage on the verbal-educational dimension decreased slightly. The boys advantage on narrow numerical and verbal dimensions decreased, while their advantage on spatial dimensions increased.

There were two major results in the third study. First, performance on Document reading tasks are determined both by general Document reading proficiency and by the specific content in the tasks. Second, gender differences were found in all these dimensions, but the pattern of gender differences varied between countries, implying strong cultural influences. Again, the patterns of gender differences on latent dimensions were not deducible from observed scores.

In the essay, a socio-cultural explanation is proposed, according to which, the differences found in the empirical studies have a material ground in both the vertical and the horizontal dimensions of the gender system.