Spatial Abilities Vary across Job Complexity: A Case of Ericsson Supply Site Tallinn

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Introduction

Ericsson is a world-leading provider of telecommunications equipment and related services to mobile and fixed network operators globally. The Estonian unit (*Ericsson Supply Site Tallinn*) operates in the field of electronic components assembly. Different job positions within the organisation require various levels of knowledges as well as cognitive abilities.

The main goal of this study was to investigate whether worker's spatial ability vary across job complexity within the organisation. It was hypothesized that more complicated job demands require higher levels of spatial abilities defined (e.g., Lohman, 1994) as capability to generate, retain, retrieve, and transform well-structured visual images.

Method

Participants

The data was collected from Ericsson Supply Site Tallinn in 2010. The sample consisted of 283 employees (50% males) with a mean age of 38 (*SD* = 12) years, ranging from 19 to 65. All the 8 groups of job positions applied in the organisation were proportionally represented.

The workers' were divided into three groups according to a level of their job complexity as follows:

- **low complexity** (*n*=93; e.g., assembly workers, soldering operators, kitting operators, transportation workers);
- **medium complexity** (*n*=99; e.g., tuning operators, inspectors, electrician-mechanicians, material handlers, stocktaking workers);
- **high complexity** (*n*=91; e.g., team leaders, maintenance workers, test technicians, troubleshooters, programmers).

Measure

The short version of the Tripod's **Spatial Abilities Scale** (*Tripod's S-RVS*; see Värk et al., 2011, for details) consisted of two subscales (*Embedded figure task* and *Surface development*), both containing 14 progressive time-limited tasks.

The raw test scores of the sample were standardised into z-scores ($m = 0$, $SD = 1$) for further analyses. The scale had good psychometric properties and all the scores of the subscales were distributed similarly to a normal curve. The internal reliability of the total scale was $\alpha = .73$ for this sample.

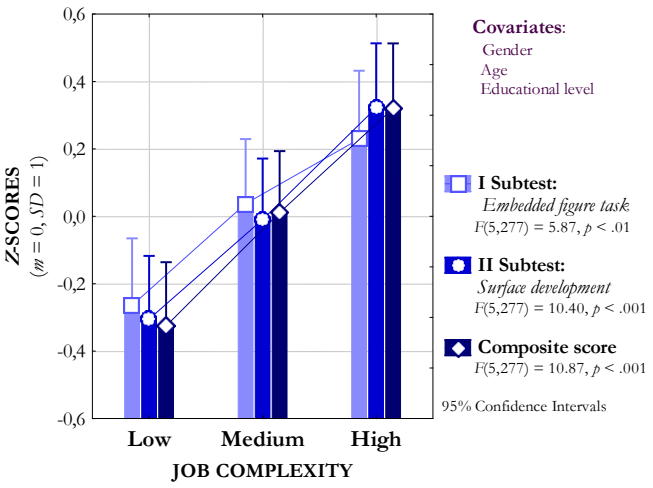
Results

Spearman rank order correlation between the *S-RVS* composite score and job complexity level was .25 ($p < .001$), indicating that more complicated professions require a higher level of spatial abilities.

Statistical analyses revealed that the mean levels of the *S-RVS* scores differed statistically significantly ($p < .001$) between job complexity groups. Analyses of covariance (*ANCOVA*) confirmed the mean level differences and main effects for subtests and composite score when age, gender and educational level were used as covariates (see *Figure 1*).

Similar pattern of results remained when professions were compared separately. For instance, the electrician-mechanicians (n=35) and material handlers (n=17), representing a medium complexity group, outperformed significantly ($p < .001$) on the *S-RVS* the assembly workers (n=45; low complexity). Similarly, the maintenance workers (n=15; high complexity) had significantly higher level of spatial abilities compared to the transportation workers (n=22; low complexity) or warehouse workers (n=27; medium complexity).

Figure 1. Spatial abilities measured using the S-RVS by job complexity.



References

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Conclusion

High complexity professions require above the average spatial abilities in the field of electronic components assembly. Therefore, standardised assessment of spatial abilities may be useful and reasonable in personnel selection and career guidance processes in the manufacturing when more sophisticated tasks and labour directions are involved.

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