



A Longitudinal Analysis of Confirmatory Factor Structure and Measurement Invariance of the Demand Control Support Model: An evidence from SLOSH

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Background

Perception about working environment is changing over time. However, studies related to psychometric properties of the underlying constructs measuring the individuals' perception about working environment are limited. There is a need to look into dimensionality and stability of the measurement over time.

Objective

To examine the factor structure and evaluate longitudinal measurement invariance of the Swedish version of the demand-control-support questionnaire (DCSQ).

Methods

A confirmatory factor analysis (CFA) and a multi-group confirmatory factor analysis (MGCFA) models within the framework of structural equation modeling (SEM) have been used to see the factor structure and invariance across time using three waves of SLOSH (2006, 2008 & 2010).

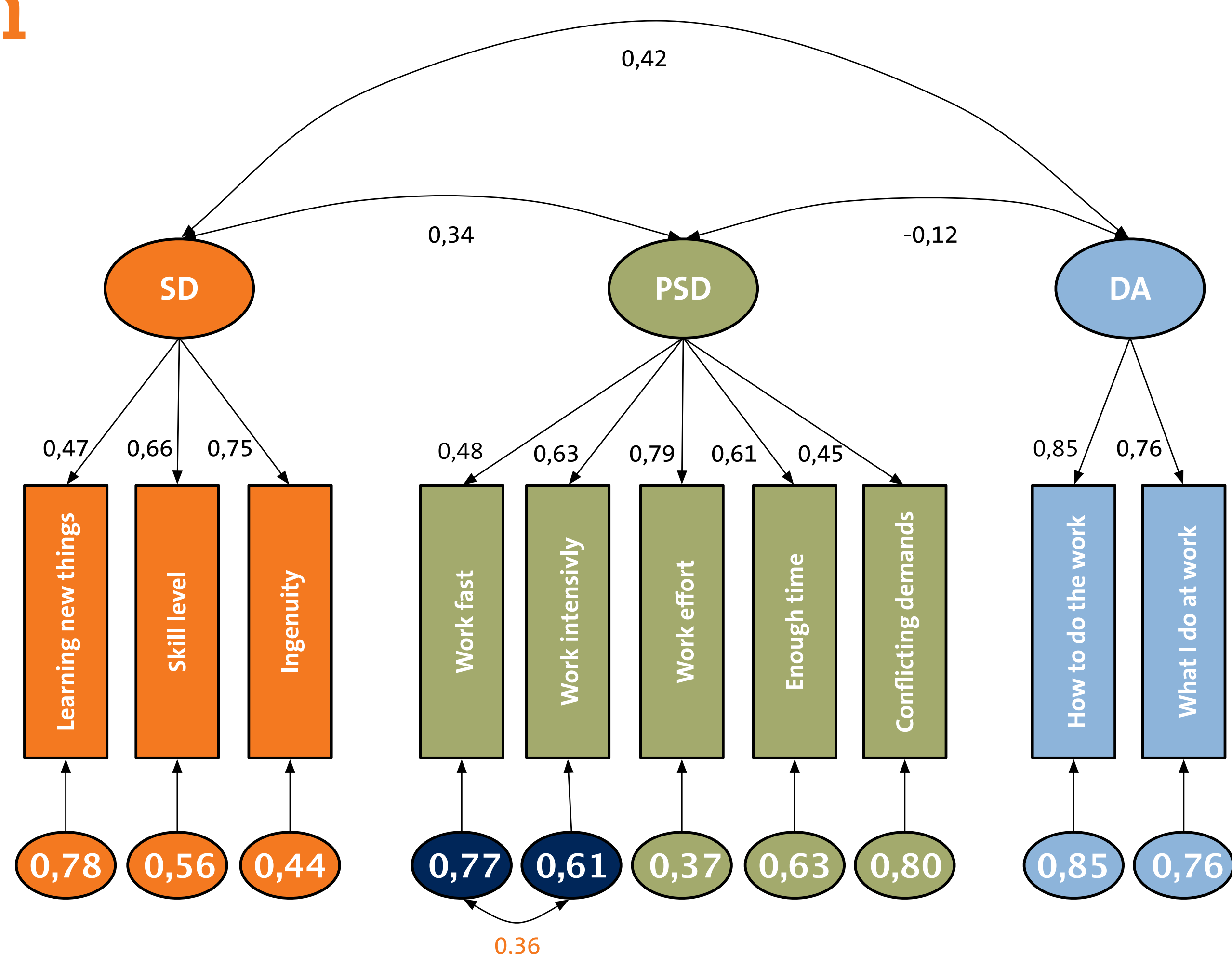
Results & Conclusion

Results

Three factors-psychological demand, skill discretion and decision authority was confirmed by CFA at baseline, with the best fit model by removing social support at work and the item *repetitive work* of skill discretion (FIGURE 1). A measurement error correlation (0.36) between *work fast* and *work intensively* of demand was also confirmed. Acceptable composite reliability measures were obtained except for skill discretion (0.66). The invariance of the same factor structure was established, but caution in comparing mean levels of factors over time as lack of intercept invariance was evidenced. However, partial intercept invariance was established by freely estimating *work fast* and *work intensively* (TABLE 1)

Conclusion

Our findings indicated that skill discretion and decision authority represented two distinct constructs in the retained model and the item *repetitive work* may be removed along with one of the items *work fast* or *work intensively*. Care should be taken while making comparisons in the constructs across time and suggested for further research with job-category specific individuals.



$\chi^2(df)=435.46(31)$; CFI=0.962; RMSEA=0.051; SRMR=0.033

Figure 1: Revised conceptual Demand-Control model

Table 1: Longitudinal measurement invariance tests of demand-control factor model over time (N=14498).

| Competing Models | χ^2 (df) | RMSEA | SRMR | $\Delta \chi^2^*$ (Δdf) | CFI (ΔCFI) |
|--------------------------------------|---------------|-------|-------|-----------------------------------|----------------------|
| Configural invariance (M1) | 2866.96(336) | 0.023 | 0.037 | - | 0.964 |
| Metric invariance (M2) | 2920.44(350) | 0.023 | 0.037 | 55.95(14) | 0.963(-0.001) |
| Factor variance invariance (M3) | 2993.76(356) | 0.023 | 0.038 | 71.09(6) | 0.963(0.000) |
| Factor covariance invariance (M4) | 3009.65(362) | 0.022 | 0.038 | 23.88(6) | 0.962(-0.001) |
| Observed disturbance invariance (M5) | 3186.46(382) | 0.023 | 0.039 | 176.19(20) | 0.960(-0.002) |
| Observed intercept invariance (M6) | 4624.67(402) | 0.027 | 0.043 | 1551.70(20) | 0.940(-0.020) |
| Partial intercept invariance (M7) | 3534.70(392) | 0.024 | 0.040 | 375.26(10) | 0.955(-0.005) |

Note: *Satorra-Bentler scaled chi-square difference.