The multiple faces of working memory: Storage, processing, supervision, and coordination

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Abstract: Working memory capacity was differentiated along functional and content-related facets. Twenty-four tasks were constructed to operationalize the cells of the proposed taxonomy. We tested 133 university students with the new tasks, together with six working memory marker tasks. With structural equation models, three working memory functions could be distinguished: Simultaneous storage and processing, supervision, and coordination of elements into structures. Each function was further subdivided into distinct components of variance. On the content dimension, evidence for a dissociation between verbal-numerical working memory and spatial working memory was comparatively weak.

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Corrigendum


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The authors regret that upon a reanalysis they found that Model 2 (as displayed in Fig. 2 of the original article) did not fit the data adequately (two errors were estimated to be zero or negative). A model with an adequate fit, obtained through fixing the loadings of DT verbal and DT numerical on the verbal-numerical factor to zero is displayed as follows. This model had an excellent fit with $\chi^2(44) = 40.9$, CFI = 1.0, RMSEA = 0. The content factors, however, had to be reduced in scope to such a degree that they believe that a model without them provides a theoretically more adequate representation of the data. That model, with three functional factors and correlated errors between verbal and numerical monitoring, and between verbal and numerical dual-tasks, but without content factors, had a good fit as well, $\chi^2(49) = 53.07$, CFI = .988, RMSEA = .025.

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Fig. 2. Model 2: Measurement model for the tasks representing the facet matrix of working memory, with general switching costs (GSW) as indicators for supervision. Errors were omitted from the figure for clarity. No error intercorrelations were admitted.