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Item and binding retention as mechanisms mediating the relationship between attentional control and working memory capacity

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Abstract

The binding hypothesis as a mechanism for the known relationship between working memory (WM) capacity and attentional control was tested. Three hundred forty-nine participants completed tasks assessing attentional control (Stroop, Simon, Flanker), working memory capacity (Symmetry Span), and two tasks specifically designed to differentiate item and binding errors in visual working memory. Structural equation models showed that attentional control predicted both item memory ($\beta = .301$, 95% CI [.164, .438]) and binding precision ($\beta = .344$, 95% CI [.228, .460]), which predicted WM performance (item: $\beta = .312$, 95% CI [.206, .418]; binding: $\beta = .260$, 95% CI [.140, .380]). Moreover, both pathways partially mediated the relationship between attentional control and WM capacity (item: $\beta = .094$, 95% CI [.043, .145]; binding: $\beta = .089$, 95% CI [.040, .138]). These results suggest that the link between attentional control and WM capacity reflects partially overlapping item and binding processes.