

Discriminative learning and associative memory under the differential outcomes procedure is modulated by cognitive load

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Working memory (WM) has been thought to be the cause of associative memory deficits in older adults. Previous research has demonstrated the benefits of a discriminative learning procedure, the differential outcomes procedure (DOP), to ameliorate such associative-memory maintenance deficits in situations that simulate adherence to medical prescriptions in both healthy and pathological ageing. Specifically, the DOP involves rewarding each correct response to each stimulus-stimulus association with a distinct and unique outcome (reinforcer). The aim of the present study was to explore the limits of this procedure by testing the amount of cognitive load at which the DOP improves discriminative learning and associative memory in a task that simulates adherence to medical treatment in undergraduate students. During the training phase, participants were asked to learn three pill/name (low-load condition) or four pill/name associations (high-load conditions) under the DOP in comparison with a control condition (the non-differential outcomes condition, NOP). Long-term retention of such learned associations was tested 1 h and 1 week after completion of the training phase. Participants showed a better accuracy and long-term retention of the learned associations when the DOP was used, but just in the high-load condition. These results suggest that when WM is overtaxed, the DOP plays a fundamental role in the long-term maintenance of the learned stimulus-stimulus associations, rendering such learning procedure as a useful technique to enhance people's discriminative learning and associative memory. © 2020 Elsevier B.V.

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Differential outcomes procedure

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Working memory capacity

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