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Towards metacognitive learning in depression

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Abstract

Recent studies have linked depression to aberrations in metacognition, particularly metacognitive bias (overall confidence) and sensitivity (ability to differentiate correct/incorrect trials). However, whether these alterations stem from shifts in metacognitive learning is unclear because previous paradigms have tested either (retrospective) performance-beliefs isolated from performance-feedback or (prospective) performance-expectations on a few trials only. Here, we examine perceptual performance, self-performance-beliefs and how performance-feedback alters self-evaluation; we develop a novel paradigm that enables evaluating performance continuously and derive metacognitive measures using linear-mixed-modelling of performance and performance-beliefs. Our results suggest that depressive traits are associated with negative shifts in metacognitive bias but not sensitivity. Furthermore, feedback incorporation was independent of depressive traits and generally more pronounced after desirable feedback. Our study contributes towards a better understanding of how disadvantageous self-beliefs are formed and maintained in depression and offers promise for a computational cognitive science of metacognitive learning beyond the study of depression.