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# Rapid evaluation of error significance during performance monitoring

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## Abstract

The continuous monitoring for errors in ongoing behavior is crucial for achieving goal-directed performance. To adaptively adjust behavior in response to an error, it is not only necessary to detect the occurrence of an error but also to evaluate its significance for future behavior. Although evidence for such an evaluation has been provided, little is known about the speed and flexibility of this process. In the present study, we used event-related potentials to investigate whether error significance influences early correlates of performance monitoring under conditions where significance had to be evaluated during task execution. In two experiments, participants responded to the location of a target stimulus while ignoring two simultaneously presented distractor stimuli that were associated with different amounts of monetary loss. While behavioral responses to low-loss and high-loss distractors were equally frequent, the error-related negativity, a negative deflection peaking immediately after error responses, was larger if the error was associated with a higher loss. This suggests that information about error significance is evaluated during task execution, which implies a rapid and flexible evaluation process.

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