

*Behavioral, cognitive, and neural mechanisms of the performance-monitoring system in reading:
Domain-general conflict monitoring and individual differences in linguistic error detection*

Abstract:

e) Purpose – In order to comprehend successfully, readers must be able to quickly detect and respond to linguistic errors. However, error-monitoring abilities can vary considerably, even among healthy adult readers.

f) Method – To investigate this question, participants read short discourses for comprehension while monitoring for the presence of semantic errors. We used a factor analytic approach to examine the link between domain-general conflict monitoring (Stroop, AX-CPT) and individual differences in linguistic error processing.

g) Results – Non-linguistic conflict monitoring predicted both readers' end-of-trial acceptability judgments and the amplitude of a late neural response (the P600) evoked by semantic anomalies. Notably, the influence on the P600 was non-linear, suggesting that online neural responses to linguistic errors are influenced by both the effectiveness and efficiency of domain-general conflict monitoring. These relationships were highly specific and remained after controlling for variability in working memory capacity and verbal knowledge. Finally, we found that domain-general conflict monitoring also predicted individual variability in measures of reading comprehension, and that this relationship was partially mediated by behavioral measures of linguistic error detection.

h) Conclusions – These findings highlight the important role of domain-general executive functions in reading comprehension, with important implications for the diagnosis and treatment of language impairments. Based on recent MEG and fMRI evidence, we also discuss the neural circuitry that supports linguistic error processing, and how these processes may become impaired in a range of clinical disorders, including schizophrenia.

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