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Correlations between inhibitory and attentional abilities and monitoring processes in reading performance among second-grade students

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Introduction: Monitoring processes while reading have been speculated to draw on linguistic skills, as well as other cognitive abilities such as response inhibition and attentional control. Previous studies have suggested that during monitoring processes, students may also rely on response inhibition to detect conflicting cues and suppress irrelevant information, and on attentional control to sustain task engagement and identify important ideas. This study evaluated whether monitoring processes in reading performance (i.e., self-correcting word-reading errors while reading aloud, and recalling important versus trivial ideas of what has been read) were correlated with inhibitory and attentional abilities, in addition to linguistic skills known to contribute to reading performance (e.g., word recognition, vocabulary knowledge).

Methods: Second-grade students (N = 154) read aloud one narrative and one expository text. Performance on these texts was used to capture students' probabilities of self-correcting (pSC) reading errors and of recalling (pRC) important ideas. While reading aloud, errors were counted when what students read deviated from the text (e.g., mispronunciations, additions, omissions). Self-corrections were scored when students executed unprompted revisions of their reading errors. After reading, an idea checklist was used to determine the degree to which students recalled important ideas from the text. Ratings from an independent adult sample were used to classify how important each idea was to comprehending the text. Standardized measures were administered for students' word recognition (timed and untimed conditions) and vocabulary knowledge (receptive and expressive subtests). Students' response inhibition and attentional control were tested with performance-based assessment (conflicting and contralateral motor tasks) as well as with rating-scale evaluation (parent questionnaires). Background variables were collected to account for students' socioeconomic circumstances (parents' educational attainment), familial reading history (parents' self-report), school information (Title 1 status), and sex. Regression analyses were conducted to investigate whether inhibitory and attentional abilities predicted monitoring processes (pSC and pRC) uniquely from linguistic skills. Text description (genre and topic) and background variables were covariates.

Results: Findings confirmed that monitoring processes were positively correlated with students' linguistic skills. Increased pSC was predicted by better word recognition, whereas higher pRC was explained by greater vocabulary knowledge. Moreover, uniquely from linguistic skills, differences in monitoring processes were positively correlated with students' inhibitory and attentional abilities. Increased pSC was predicted by greater response inhibition, while higher pRC was predicted better attentional control.

Discussion: Overall, results suggest that inhibitory and attentional abilities, aside from linguistic skills, are linked to students' monitoring processes while reading.

Keywords:

Reading, Monitoring processes, Cognitive function