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Adolescent Metacognitive Ability Predicts Spontaneous Task Strategy Adjustment

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Abstract

Adolescence is a critical period for developing higher-order processes, such as the ability to selectively switch attention in response to changes (cognitive flexibility) and employing strategies for regulating attention (metacognitive skill). We adapted a measure of cognitive flexibility, the cued task-switching paradigm, by allowing participants to control their preparation time. Adjusting preparation time according to the demands of the upcoming trial requires metacognitive awareness of task demands and cognitive processing limits. Therefore, we propose that this strategy of preparation adjustment captures metacognitive skill. In a large-scale study ($N = 141$) with adolescents aged 11-15 years, results indicate that participants spontaneously adopted a preparation adjustment strategy. Increased self-paced preparation time was associated with decreased cognitive flexibility costs and was positively related to questionnaire measures of metacognitive skill. Overall, these findings suggest that individual differences in metacognitive skill impact the extent to which adolescents spontaneously adopt a strategy to improve cognitive flexibility.