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Measuring sustained attention across timescales to predict learning in real-world environments

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Abstract

How well students learn depends on their ability to sustain attention. However, it is currently unclear how to measure sustained attention in the classroom and relate those underlying attentional dynamics to academic engagement and performance. Here we leverage a suite of sustained attention instruments to explore how individual differences in sustained attention account for differences in learning outcomes in a university STEM course (N=248). We found that a student's ability to sustain attention predicted their subsequent academic achievement in the course. Sustaining attention was also associated with STEM-related stress, anxiety, and students' confidence in their ability to learn the course material. We are additionally exploring interaction logs from the digital textbook students used to investigate the mechanisms linking sustained attention to subsequent achievement. Together, these findings highlight the promise of studying attention and learning across timescales to advance mechanistic understanding of human cognition in real-world environments.