

The Effects of Different Learning Schedules

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Abstract

Background. Learning involves encoding and retaining information. Previous studies have investigated different methods that lead to the greatest learning. Two common methods are massing—studying one topic during one time period—and spacing—interleaving topics and studying across multiple sessions. Massing may facilitate encoding (Carvalho & Goldstone, 2014, 2015), whereas spacing is the best route to retention (Cepeda et al., 2008). However, which of these methods is best for individuals with symptoms of Attention-Deficit Hyperactivity Disorder (ADHD) is untested.

Approach. We tested individuals with and without ADHD symptoms. We also included a novel timing schedule called “clustering” that combines aspects of spacing and massing. We predicted that all individuals, especially those with ADHD symptoms, would benefit most from clustering, which involves support for initial encoding—repetitions (“clusters”)—and support for retention—spacing out of those clusters.

Method. Participants ($n=84$) learned the painting styles of unfamiliar artists on three training schedules—massed, spaced, and clustered—in a within-subjects design, with schedule order randomized (see Figure 1A). Participants were tested immediately following training (encoding) and on a subsequent day (retention; see Figure 1B). Individuals were classified into either ADHD or non-ADHD symptom groups using a validated six-item screener (ASRS [V1.1]; Kessler, 2005, 2007).

Results. Preliminary results revealed that training condition was a significant predictor of learning. Specifically, clustering and spacing resulted in equally greater encoding ($ps < .01$) and retention ($ps < .001$), compared to massing (see Figure 1C-D). Additionally, there was a marginal main effect of ADHD-symptom group; individuals with symptoms of ADHD exhibited marginally worse encoding ($p = .087$), but not retention ($p = .222$).

Discussion. These findings provide the first evidence of timing effects in individuals exhibiting ADHD symptoms. They also suggest that, because individuals typically do not space out their studying, it might be advisable to recommend clustered studying, where performance is just as good as spacing.

Keywords: Massed, Spaced, Learning, Timing

Further Reading

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