

Mind wandering and learning abilities and disabilities

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Research topic: Any action requires energy. The body's muscles need energy in order to contract and the neurons in one's brain need energy in order to function. Nevertheless, we constantly spread our mental energy and our brain is always in action. When the brain is not involved in the relevant task, the brain begins activating cortical regions associated with wandering thought. Mind wandering (MW) is defined as a situation in which, without intention, the attention system shifts from the attended task to the processing of personal goals. When mind wandering occurs, it can be associated with deficits in other relevant tasks because fewer resources are available to complete them. MW is an important measure that can capture attentional deficiencies in populations with attention disorders such as ADHD, sometimes even better than other measurements taken during the task. Although learning disabilities such as developmental dyslexia and dyscalculia may be rooted in specific numerical or reading deficiencies, they also involve attentional deficiencies. (e.g., Geary, Hamson, & Hoard, 2000; Goldfarb, 2018). This study will extend the investigation of attention deficits in developmental dyslexia and dyscalculia to another important aspect of attention deficiency – MW.

Specific research predictions:

- 1) Children diagnosed as LD (dyslexia, dyscalculia) in school will have had higher levels of mind-wandering in kindergarten.
- 2) Children with difficulties in the numerical domain will have a higher level of mind wandering in numerical tasks but not in non-numerical tasks. In contrast, individuals with difficulties in the literacy domain will have a higher level of mind wandering in reading tasks but not in numerical tasks.

Why is this study unique? Although the topic of mind wandering has been extensively studied with relation to ADHD, the connection between mind wandering and learning abilities and disabilities has never been addressed. The current study will be the first comprehensive investigation of WM in the LD population.

Planned analyses: In addition to collecting data on the reading, writing, and numeracy abilities of the Safra longitudinal sample, I have added a mind wandering measure to examine the connection between this aspect of attention and reading, writing, and math abilities. Here, I will examine the role of wandering thoughts in learning, and how the tendency for mind wandering

affects learning abilities in different academic domains and among children with various learning disabilities such as developmental dyslexia and dyscalculia. I will also ask whether MW during task performance is an early predictor of later disabilities.

Why is my research important for education and/or clinical practice? The current study may foster new theoretical perspectives about learning disabilities and clarify the nature and symptoms of those individuals. In addition, if individuals with learning disabilities indeed suffer from mind wandering, taking this aspect into consideration is important for maximizing their learning ability and helping them develop strategies and tools that focus specifically on mind wandering tendencies.