Reading Comprehension Deficits of Readers with ADHD:

Text Processing, Inference Generation and Working

Memory

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Abstract

The high prevalence of Attention Deficit Hyperactivity Disorder (ADHD) attracts over the years much clinical research attention, trying to understand the mechanisms underpinning it. In school, there are demanding terms of attention, and various research findings have pointed it as a necessary measure for efficient reading. However, despite the prevailing consensus about the crucial importance of attention in the process of reading and understanding, only few studies have examined the *reasons* for difficulties in reading comprehension among readers with ADHD. Reading Comprehension is a high-order complex process that depends on the simultaneously operation of various cognitive mechanisms. Inference generating, identified as a necessary academic ability when trying to compete with reading comprehension tasks. Inference generation helps us not only to understand the text more thoroughly, but to remember it better, and has an important role in clarifying the links between textual ideas and establishing text coherence. In the past, it has been found that readers with ADHD make fewer inferences while reading, have difficulties in identifying discrepancies and refer episodically (separately) to any piece of information in the text, without making conceptual connections between the text ideas. Most of those previous studies used mostly traditional methods, such as "off-line" measurements, at the end of reading. While they are very informative, they teach us only little about the processes that occur while reading.

In the present study, we examined comprehension ability among readers with ADHD by short written stories, in order to identify the difficulties that underlie their ability to compete with texts. Specifically, the study examined the ability of adolescents with ADHD to process text and generate inferences "on-line" (while reading), using a paradigm known as probing, that examines the readers immediate

and spontaneous arousal of information while reading. The participants in the study were asked to name textual and inferred word-probes, that appeared in three positions within short, specially-designed narratives. Inference probes tapped the activation of the inferences, and the text probes tapped the retention, the suppression and the reactivation of the critical text information. The reaction time to the probes was measured using a special microphone, called Voice Key, which measures the time required from displaying the word till the participant *starts* reading it. Results showed that readers with ADHD generate fewer inferences, both bridging and elaborative, than normal readers, and that this difficulty in generating inferences, occurs while reading the story. In addition, we found that readers with ADHD had more difficulties in the retention of the relevant text necessary for making the prediction, and in suppressing this information when it becomes less relevant. Furthermore, we found that ADHD readers did not differ in their ability to answer questions correctly, but showed significantly slower response to the question. This study suggests that the capabilities of sustained attention, working memory, reading fluency and text retention, may explain the difficulty showed by readers with ADHD when trying to generate inferences during reading. In addition, the study suggests that the difficulties that were found for participants with ADHD in maintaining text and making an efficient use of inferences while reading, requires them to repeat those procedures again when asked about it explicitly, in a way that led to a slower response time when answering questions. These results have important implications and can support important development of remediation programs made specifically for readers with ADHD, and help by suggesting reading comprehension strategies for improving their performance.