

**BAR-ILAN UNIVERSITY**

**The centrality deficit of readers with ADHD:  
Evidence from a think-aloud study**

Anat Lavi

Submitted in partial fulfillment of the requirements for the Master's Degree,  
School of Education, Bar-Ilan University.

Ramat Gan, Israel

2020

## Abstract

Attention Deficit Hyperactivity Disorder (ADHD) is a neurological disorder characterized by inappropriate levels of inattention, impulsivity and hyperactivity (American Psychiatric Association, 2013), and it is the most common behavioral disorders among school-aged children. There is a strong link between ADHD and academic underachievement in general, and deficits in reading comprehension in particular. Previous studies which examined the nature of reading comprehension have found that readers with ADHD have difficulty in identifying and processing central ideas in the text (Miller et al., 2013). A central idea refers to a text idea which is connected to many other ideas in the text. The more central an idea is, (i.e. the more connected to other ideas), the more likely it is to be recalled. This phenomenon is referred to as the *centrality effect* (Brown & Smiley, 1977). Although ADHD readers showed the centrality effect in text recall (i.e. recall more central ideas than peripheral), they recalled fewer central ideas than typically developed readers, whereas no or a lesser reduction has been observed in recalling peripheral ideas. This phenomenon is referred to as the *centrality deficit* (Miller & Keenan, 2009).

The present study examined the cognitive deficits underlying difficulties in reading comprehension in general, and centrality deficit in particular, among adolescents with ADHD. Specifically, by employing a think-aloud procedure (Kendeou & van den Broek, 2007; Linderholm & van den Broek, 2002) and centrality estimations of text ideas during reading, we examined whether shallow text processing of central ideas in long-term memory and/or difficulty in identifying these ideas underlay the difficulties that individuals with ADHD experience in understanding and recalling text ideas after reading. To do so, participants were asked to state aloud whatever comes to their mind during the reading of two expository texts, as well as rating the centrality of

text ideas on a 5-level scale. After reading, participants were asked to recall the texts and answer five multiple choice comprehension questions.

The results of the current study showed that during reading, the participants with ADHD engaged in a shallower text processing, formed fewer connections between text ideas, and distinguished to a lesser extent between central and peripheral ideas compared to typically developed participants. Furthermore, the participants with ADHD exhibited difficulties also after reading. In the recall task, the participants with ADHD showed a smaller gap between recalling central and peripheral ideas (centrality deficit) compared to typically developed participants. In answering comprehension questions, participants with ADHD were less accurate and slower compared to typically developed participants. In addition, we found that shallow text processing during reading predicted the proportions of recalling text ideas over and above the identification of central ideas in the text.

These findings suggest that the use of shallow text processing, and specifically poor formation of connections between text ideas, underlay the centrality deficit of readers with ADHD. Furthermore, they suggest that the difficulty of readers with ADHD in establishing connections between text ideas is the cause for the difficulties in both identifying and recalling central ideas, without a direct effect of identification on recall. These findings have important implications for the development of specific interventions for comprehending expository texts by readers with ADHD, which should encourage the formation of connections between text ideas and the application of deeper strategies of text processing during reading.