

---

## **A Pilot Study of Computerized Cognitive Training in Adults with Attention-Deficit/Hyperactivity Disorder: Change in Executive Functions and Quality of Life Following 3 Months of Training Using the AttenGo™ Program**

Adi Stern, Yehuda Pollack, Avi Yakir, Adina Maeir

---

**Key words:** Adult attention-deficit/hyperactivity disorder, executive functions, cognitive training, occupational performance, quality of life

### **Abstract**

**Objective:** Executive function (EF) deficits in adults with ADHD have been shown to have a negative impact on everyday functioning and quality of life (QOL). Very few cognitive training studies have targeted EF deficits in individuals with ADHD. Although positive effects have been demonstrated on training tasks, neuropsychological and ADHD symptomatology measures, additional evidence is needed to confirm these findings as well as to examine the effects on EFs, everyday functioning and QOL. Thus, the goal of this pilot study was to further examine the effect of computerized cognitive training for adults with ADHD on measures of ADHD symptomatology, EFs, occupational performance and QOL. **Method:** Adults with ADHD (N=14) trained on the AttenGo™, an on-line computerized cognitive program. **Results:** Before and

---

**Adi Stern**, MSc, OT, School of Occupational Therapy, Faculty of Medicine, Hadassah and Hebrew University of Jerusalem, Jerusalem, Israel. Department of Adult Psychiatry, Hadassah University Medical Center Ein Kerem, Jerusalem. [adischleyer@hotmail.com](mailto:adischleyer@hotmail.com)

**Yehuda Pollak**, PhD, The Neuropediatric Unit, Shaare Zedek Medical Center, Jerusalem. Department of Psychology, Hadassah and Hebrew University of Jerusalem, Jerusalem. [msyehu@huji.ac.il](mailto:msyehu@huji.ac.il)

**Avraham Yakir**, M.D., Psychiatrist, NATIV - Multidisciplinary Adult ADHD Center, Medical Director, Jerusalem, Tel-Aviv, ISRAEL. [avi.yakir@nativ-adhd.co.il](mailto:avi.yakir@nativ-adhd.co.il)

**Adina Maeir**, PhD, OT, School of Occupational Therapy, Faculty of Medicine, Hadassah and Hebrew University of Jerusalem, Jerusalem, Israel. [adinamaeir@gmail.com](mailto:adinamaeir@gmail.com)

---

after comparison demonstrated significant, moderate to large effects of the training on all outcome measures except the COPM. **Conclusion:** The findings provide preliminary supporting evidence for computerized cognitive training in adults with ADHD and warrant further controlled studies to examine its potential impact on functional outcomes.

### Introduction

Attention-Deficit/Hyperactivity Disorder (ADHD) is a chronic mental health disorder of childhood characterized by inattention, impulsiveness and hyperactivity (Diagnostic and Diagnostic and Statistical Manual of Mental Disorders, 4<sup>th</sup> edition [DSM-IV]; APA, 1994). Long-term controlled follow-up studies have shown that the disorder persists in a sizeable number of adults who were diagnosed as having ADHD in childhood, and the estimated prevalence of adult ADHD is approximately 4% of adults worldwide (Wilens, Faraone, & Biederman, 2004). ADHD is now increasingly recognized as a developmental impairment of executive functions (Brown, 2008). The term executive function (EF) refers to a wide range of higher cognitive processes that enable goal-directed behavior and play a critical role for all individuals as they manage multiple tasks of daily life. EFs include response inhibition, initiation, implementing strategies for performance, shifting, intrusion control, working memory and control of complex cognitive or motor responses (Brown, 2008; Castellanos, Sonuga-Barke, Milham, & Tannock, 2006; Lezak, Howieson, Loring, Hannay, & Fischer, 2004; Nigg et al., 2005; Roth & Saykin, 2004). Converging evidence points to prominent disturbances in a wide range of EFs in children and adults with ADHD that impedes the quality of their daily lives (Biederman et al., 2006, 2007; Nigg et al., 2005; Roth & Saykin, 2004).

The functional and occupational implications of living with ADHD are becoming more evident as the research on adult ADHD increases. These implications include impairments in academic, occupational, social, and emotional domains of functioning (Solanto, Marks, Mitchell, Wasserstein, & Kofman, 2008). In addition, adults with ADHD have been shown to be at greater risk for lower socioeconomic status, fewer years of education, lower academic achievements, lower rates of professional employment, more frequent job changes, more work difficulties, increased rates of antisocial behavior and arrests, driving violations, relationship difficulties manifested in interpersonal conflicts and higher rate of spousal separation and divorce (Adler et al., 2008; Barkley, 2002; Barkley, Murphy, & Fisher, 2008; Brod, Johnston,