

Adult Academic Literature Summary

A comprehensive summary of publications using MOXO with adult populations.



Adults (age 20 and above) accounted for 24% of all MOXO assessments conducted worldwide during 2023.

Topics include:

- Comorbidity
- Feigned ADHD
- Sleep Deprivation
- Eye-Tracking
- Neuroscience
- Malingering
- Cystic Fibrosis



Attention-Deficit/Hyperactivity Disorder (ADHD): Integrating the MOXO-dCPT with an Eye Tracker Enhances Diagnostic Precision

Tomer Elbaum, Yoram Braw, Astar Lev, and Yuri Rassovsky
Sensors (2020) | <https://doi.org/10.3390/s20216386>

- Aimed to evaluate the utility of integrated eye tracking with the MOXO-dCPT to enhance diagnostic precision
- 43 adults with ADHD and 42 controls without ADHD were tested
- Eye tracking data was collected during the MOXO-dCPT using an EyeLink 1000 eye tracker.

Key Takeaway

Participants with ADHD gazed more outside of the task stimuli presentation area, especially in the presence of visual distractors as compared to the control population. Findings suggest that eye tracking may enhance the discriminative capacity of the MOXO-dCPT.

Eye Tracking During a Continuous Performance Test: Utility for Assessing ADHD Patients

Astar Lev, Yoram Braw, Tomer Elbaum, Michael Wagner, and Yuri Rassovsky
Journal of Attention Disorders (2020) | <https://doi.org/10.1177/1087054720972>

- Aimed to assess the utility of integrating eye tracking with the MOXO-dCPT to differentiate between patients with ADHD and controls.
- 33 participants with ADHD and 33 age and gender matched controls were tested.
- Participants performed the MOXO-dCPT on an eye tracking computer.

Key Takeaway

A scale that combined eye movement measures and MOXO-dCPT indices enhanced the ADHD or control group prediction.

Detection of Feigned ADHD Using the MOXO-d-CPT

Corinne Berger, Astar Lev, Yoram Braw, Tomer Elbaum, Michael Wagner, and Yuri Rassovsky
Journal of Attention Disorders (2019) | <https://doi.org/10.1177/1087054719864656>

- Aimed to assess the use of MOXO-dCPT in detecting feigned ADHD.
- 47 healthy participants were asked to simulate symptoms of ADHD, 47 healthy participants were asked to give their best effort and 47 participants with ADHD diagnoses were asked to perform to the best of their ability.
- Participants filled out self-report questionnaires (demographics, ASRS, WURS) and underwent the MOXO-dCPT

Key Takeaway

The MOXO-dCPT attention, hyperactivity and impulsivity indices as well as a combined feigned ADHD index all showed adequate to outstanding discriminative capacities, indicating a promising tool for detecting feigned ADHD.

Validating Embedded Validity Indicators of Feigned ADHD-Associated Cognitive Impairment Using the MOXO-d-CPT

Daniella Winter and Yoram Braw

Journal of Attention Disorders (2022) | <https://doi.org/10.1177/10870547221112947>

- Aimed to validate the use of a previously derived validity indicator for detecting feigned ADHD using the MOXO-dCPT
- The study employed 39 healthy adult simulators, 38 healthy adult controls and 36 adults with an ADHD diagnosis.
- Healthy simulators were asked to play the part of a student trying to obtain academic accommodations, and were allowed to search online for information that may aid their performance.

Key Takeaway

Study findings were consistent with the previous research examining MOXO-dCPT use in detecting ADHD, increasing the confidence in the use of the MOXO-dCPT as a valid indicator of feigned ADHD.

Feigned ADHD Associated Cognitive Impairment: Utility of Integrating an Eye-tracker and the MOXO-dCPT

Astar Lev, Tomer Elbaum, Corinne Berger, and Yoram Braw

Journal of Attention Disorders (2021) | <https://doi.org/10.1177/10870547211063643>

- Aimed to assess the utility of eye tracking together with the MOXO-dCPT to detect feigned ADHD.
- Participants included 37 healthy control participants asked to simulate symptoms of ADHD, 33 participants with an ADHD diagnosis and 36 healthy controls.
- All participants performed an eye-tracker integrated MOXO-dCPT.

Key Takeaway

Gaze direction measures showed initial promise as a validity indicator of feigned ADHD, however the traditional MOXO-dCPT measures were a more sensitive indicator.

Online Search Strategies Utilized in Feigning Attention Deficit/Hyperactivity Disorder (ADHD) While Performing a Continuous Performance Test (CPT)

Daniella Winter and Yoram Braw

Applied Neuropsychology: Adult (2022) | <https://doi.org/10.1080/23279095.2022.2128356>

- Aimed to assess online search patterns of individuals who feign ADHD symptoms.
- Participants included 39 adults who were asked to simulate ADHD, 36 adults with ADHD and 38 healthy controls.
- Simulators were asked to search the internet for information on how to feign ADHD and all participants performed the MOXO-dCPT.

Key Takeaway

Simulators with higher levels of education were more likely to use academic research tools in their internet searches, yet their MOXO-dCPT scores were easier to detect as simulators.

Attention Deficit Hyperactivity Disorder Symptoms in Patients With Cystic Fibrosis

Malena Cohen-Cymberknoh, Tzlil Tanny, Oded Breuer, Hannah Blau, Huda Mussaffi, Diana Kadosh, Silvia Gartner, Alma Salinas, Lea Bentur, Vered Nir, Michal Gur, Joel Reiter, David Shoseyov, Eitan Kerem, Itai Berger

Journal of Cystic Fibrosis (2018) | <https://doi.org/10.1016/j.jcf.2017.11.020>

- Aimed to investigate the comorbidity rate of ADHD with cystic fibrosis.
- 175 patients with cystic fibrosis were tested, patients had an average age of 20.85 (SD 12.02).
- Participants filled out the ADHD-RS and performed the MOXO-dCPT.

Key Takeaway

Occurrence of ADHD in patients with cystic fibrosis occurred at substantially higher rates than seen in the general population, suggesting that ADHD should be recognized as a common comorbidity of cystic fibrosis.

Attention-Deficit/Hyperactivity Disorder Symptoms, Sensation-Seeking, and Sensory Modulation Dysfunction in Substance Use Disorder: A Cross Sectional Two-Group Comparative Study

Naama Assayag, Itai Berger, Shula Parush, Haim Mell, Tami Bar-Shalita

International Journal of Environmental Research and Public Health (2022)
<https://doi.org/10.3390/ijerph19052541>

- Aimed to characterize how ADHD symptoms, sensation-seeking and sensory modulation dysfunction contribute to substance use disorder.
- 58 adults residing in a therapeutic community who met the diagnostic criteria for substance use disorder (SUD), with no other diagnoses; and 62 healthy age matched controls were recruited.
- All participants filled out the ASRS, BSSS and SRQ-IS questionnaires and underwent the MOXO-dCPT

Key Takeaway

Patients with SUD showed higher sensory modulation dysfunction, as well as lower attention, impulsivity and hyperactivity scores as compared to controls. Findings provide insights into new perspectives for prevention and rehabilitation in SUD.

Acute and Chronic Sleep Deprivation in Residents – Cognition and Stress Biomarkers

Shoham Choshen-Hillel, Ahmad Ishqer, Fadi Mahameed, Joel Reiter, David Gozal, Alex Gileles-Hillel, and Itai Berger

Journal of Attention Disorders (2022) | <https://doi.org/10.1111/medu.14296>

- Aimed to validate the use of a previously derived validity indicator for detecting feigned ADHD using the MOXO-dCPT
- The study employed 39 healthy adult simulators, 38 healthy adult controls and 36 adults with an ADHD diagnosis.
- Healthy simulators were asked to play the part of a student trying to obtain academic accommodations, and were allowed to search online for information that may aid their performance.

Key Takeaway

Chronic sleep deprivation that characterizes postgraduate residency training is associated with maladaptive cortisol levels and increased low-grade systemic inflammation, as well as impaired executive function and increased impulsivity.

Differential Diagnosis in Patients with Substance Use Disorder and/or Attention-Deficit/Hyperactivity Disorder Using Continuous Performance Test

Ortal Slobodin, Matthijs Blankers Máté Kapitány-Fövény, Sharlene Kaye, Itai Berger, Brian Johnson, Zsolt Demetrovics, Wim van den Brink, Geurt van de Glind
European Addiction Research (2020) | <https://doi.org/10.1159/000506334>

- Aimed to characterize attention and inhibition symptoms in adult patients with substance use disorder (SUD) with and without comorbid ADHD.
- Participants included 56 individuals with only ADHD diagnosis, 150 with only SUD diagnosis, 108 with comorbid SUD and ADHD diagnosis, and 172 healthy controls.
- All participants underwent the MOXO-dCPT

Key Takeaway

The MOXO-dCPT is a sensitive measure for adults in identifying ADHD-related symptoms, such as disinhibition, poor timing and inattention, and it is successful at differentiating between healthy controls and individuals with ADHD, SUD or both.

Beating Their Chests: University Students With ADHD Demonstrate Greater Attentional Abilities On an Inattentional Blindness Paradigm

Grossman, Ephraim S. Hoffman, Yaakov S. G. Berger, Itai Zivotofsky, Ari Z
Neuropsychology (2015) | <https://doi.org/10.1037/neu0000189>

- Aimed to assess how participants with ADHD perform on inattentional blindness (IB) tasks.
- 14 adult college students with ADHD and 18 matched controls were tested.
- Participants underwent an inattentional blindness task along with the MOXO-dCPT.

Key Takeaway

Adults with ADHD compared to controls showed increased distractibility according to the MOXO-dCPT, however they performed better in noticing both the attended and the unattended stimuli in the IB task.

Null tDCS Effects in a Sustained Attention Task: The Modulating Role of Learning

Noa Jacoby and Michal Lavidor
Frontiers in Psychology (2018) | <https://doi.org/10.3389/fpsyg.2018.00476>

- Aimed to investigate sustained attention by modulating the fronto-cerebral network with transcranial direct current stimulation (tDCS) in adults with and without ADHD.
- 21 participants with ADHD and 16 healthy controls participated in the study
- Participants underwent the MOXO-dCPT 3 times, once with no tDCS electrodes placed as a baseline measure, once with tDCS stimulation over left and right DLPFC regions, and once as a sham condition during which electrodes were placed with no active stimulation.

Key Takeaway

Differences between ADHD and control groups in MOXO-dCPT performance at baseline validate the MOXO-dCPT as a diagnostic tool in adult populations. Lack of tDCS effects may signal learning and repetition influences on cognitive performance.

Monitoring Attention in ADHD with an Easy-to-Use Electrophysiological Index

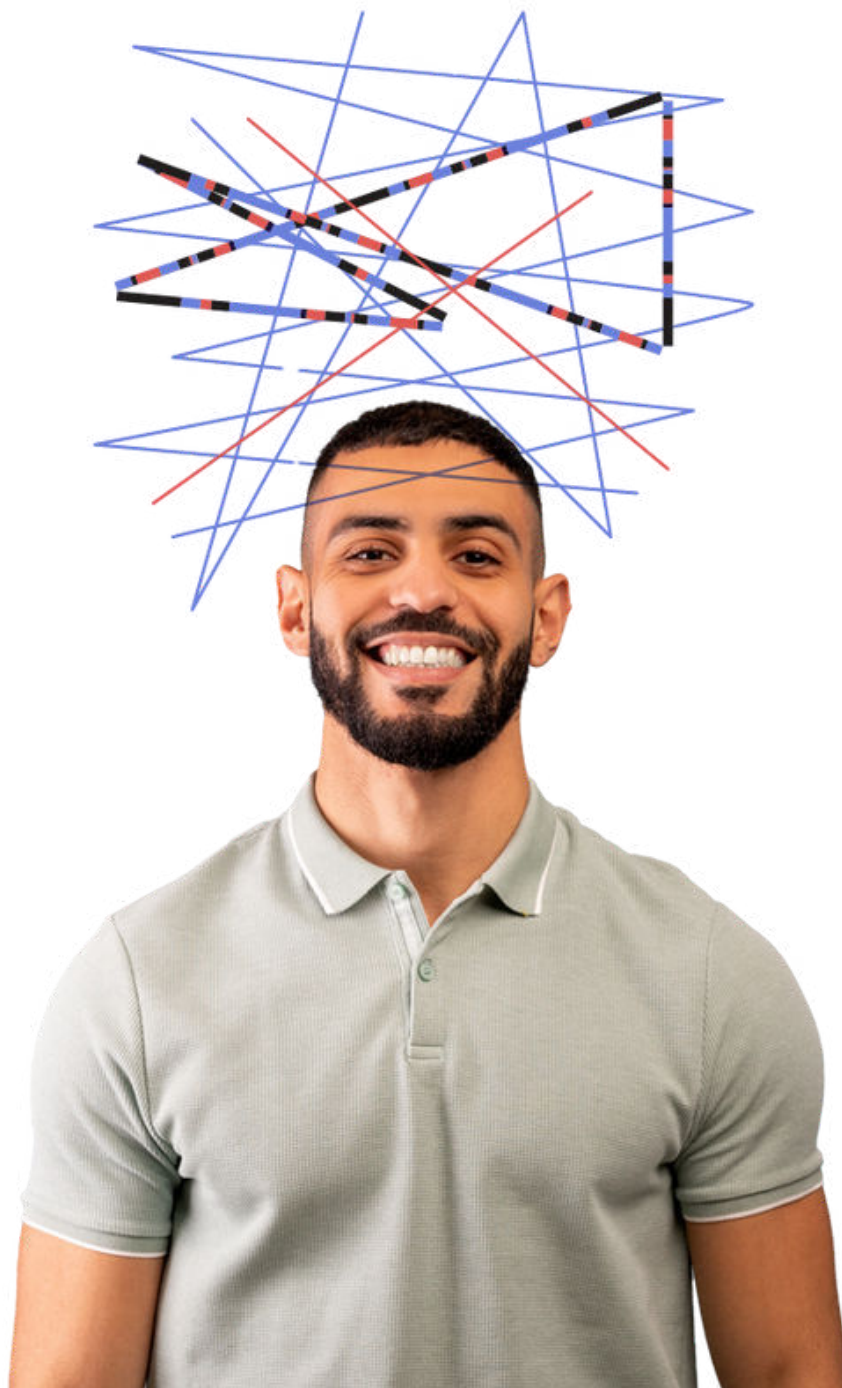
Goded Shahaf, Uri Nitzan, Galit Erez, Shlomo Mendelovic and Yuval Bloch

Frontiers in Human Neuroscience (2018) | <https://doi.org/10.3389/fnhum.2018.00032>

- Aimed to evaluate the use of a single-channel EEG marker for attention :the Brain Engagement Index (BEI) in distinguishing between ADHD patients and controls.
- 20 adult participants with ADHD and 10 controls were tested.
- Participants performed an auditory oddball paradigm and the MOXO-dCPT, while measuring EEG.

Key Takeaway

Combining the BEI marker with the MOXO-dCPT holds promise for distinguishing between ADHD and control populations.



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