ADHD assessment in children and adults: symptomatology and virtual reality

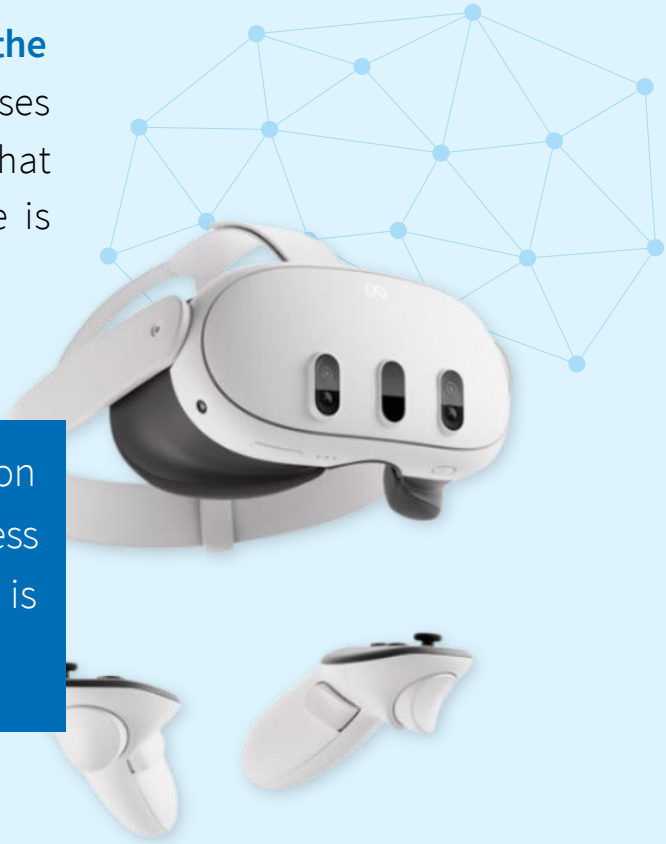
nesplora
GIUNTI PSYCHOMETRICS

INTRODUCTION

Neuropsychological Assessment With Virtual Reality

Virtual reality makes it possible to **systematically control** the presentation of different variables, stimuli and distractors that will be crucial when carrying out a neuropsychological assessment.

The responses are monitored and thanks to the **ecological validity of the results**, they are more useful and consistent compared to responses obtained through traditional tests. In addition, it is interesting to note that virtual reality encourages a **real immersion in the situation**, so there is more motivation and less risk of false negatives.



The Nesplora Aula and Nesplora Aquarium tests provide information on **sustained and selective attention**. Aula is a test to assess attentional processes in children aged 6 to 16 years, and Aquarium is used to assess attentional processes in people aged 16 to 90 years.

Why Neuropsychological Assessment Should Always Be Supported by Virtual Reality

Ecological validity of the results, allowing for much more accurate, reliable and personalised case monitoring.

A feeling of **complete immersion for the person,** which allows for a realistic and useful assessment.

Collection of **unique variables,** such as motor activity, visuospatial memory, learning potential or quality of attentional focus.

Without evaluator bias, with fully quantitative measures and reliable psychometric properties.

360° utility: although a Nesplora test is focused on a specific cognitive function, it has been shown that it allows a **broad and complete assessment** to make a double diagnosis or to find information that was not being sought.

Time savings thanks to automations.

The best **psychometric** results.

Unique **sensitivity** of assessments with VR. *Eg*, Aula correctly identifies children with ADHD in 95.2% of cases and correctly rules out children without ADHD in 91.9% of cases.

ADHD

Main Differences Between ADHD During Childhood and Adult Life

ADHD and executive function disorders in general can manifest differently in adults and children. In childhood, the symptomatology is usually more evident, but in adult life, it is common that the person has learned and developed a series of tools that mask the symptoms. For this reason, it is crucial to have a tool that complements the professional assessment and avoids these obstacles, as well as eliminating possible biases on the part of the assessing professional.

When assessing attentional processes and to confirm a diagnosis of ADHD, three components are sought: hyperactivity, inattention and impulsivity. Not all examinees present all three, and it is important to remember that a disorder is referred to when there is a clear impairment of functioning in multiple areas of life and certain scores and variables in the results of a neuropsychological test.

ADHD

Main Differences Between ADHD During Childhood and Adult Life

Children		Adults
Inattention is very characteristic: children with ADD and ADHD often have **difficulty paying detailed attention,** often make mistakes and sometimes appear distracted and careless.	Inattention	In the case of adults, persistent inattention manifests itself in their **inability to concentrate** on work tasks, carelessness and problems in planning, organising and completing tasks.
During childhood, hyperactivity (inability to sit still) is much more **explicit** and constant movement is easy to find.	Hyperactivity	Hyperactivity is identified as **general restlessness**, difficulty sitting still and easy boredom.
Impulsivity in childhood and adolescence is often clearly manifested in the **difficulty of waiting for a turn,** or in daily decision-making.	Impulsivity	Adults can **learn to control impulses** more effectively, although impulsivity is often evident in issues related to spending, leisure or risky behaviours.
Consequences in the **social and school group**, as some behavioural problems may occur.	Consequences	Problems at **work** due to lack of organisation, and social problems caused by impulsivity and lack of attention.

AULA

Explaining Nesplora Aula to parents

Innovative:

Nesplora has adapted VR technology to measure ADHD symptoms. With a virtual reality headset, a controller and headphones, children feel like they are in a classroom and have to perform tasks in real-life conditions, while the tool collects countless data.

Fun:

The Nesplora Aula experience is like a game for children: practically everyone finishes the test, enjoys the experience and stops seeing the clinic or practice as an overwhelming space. This is crucial in achieving reliable results.

Fast:

Less than 20 minutes, from start to finish!

nesplora Attention Kids aula

Objective:

After the test, a very complete automatic report is generated that gives the professional all the information necessary to know the state of attention and other processes related to ADHD, such as impulsivity or motor activity.

Reliable:

The results are compared with 1500 other children who have already taken the test. This is done to find out if any scores are out of the average. Nesplora Aula has its normative study: a very broad study that collects information about the child and adolescent population and establishes patterns and limits.

Aula is useful for pathologies such as anxiety, behavioural problems, reading and writing problems, learning difficulties, possible brain damage and, in general, to carry out a complete neuropsychological evaluation.

DOWNLOAD PSYCHOMETRIC PROPERTIES

DOWNLOAD SAMPLE REPORT

AQUARIUM

Sharing the advantages of Aquarium

Deep self-knowledge

Nesplora Aquarium is a test designed for the developed brain that assesses aspects such as attention, impulse control, memory and adaptability. Measuring these processes is very useful to make a personalised diagnosis and recommend possible training, treatment or rehabilitation if necessary. In addition, the data from the Nesplora tests are ecologically valid and the person can take them several times without a learning effect, which is very useful for monitoring a person over time.

Fast, simple and fun

The examinee experience is comfortable: in about 20 minutes in total, they enter a scenario through a virtual reality set (headset, controller and headphones) in which they are presented with tasks and challenges. The premise is that it is their first day of work there and they have to perform a series of fish tank checks.

Comprehensive and reliable

After the virtual reality experience, an automatic report is generated that includes all the variables to be analysed by the professional. The report collects aspects such as motor activity, analyses impulsivity and perseverance, assesses reaction time and the quality of attentional focus, collects task switching cost and studies working memory.

nesplora
Attention Adults
aquarium

Nesplora Aquarium is the most sensitive, accurate and specific test for the detection of attentional processes in adulthood. It has excellent diagnostic and discriminatory power with no ceiling or floor effect, high predictive value and reliability.

DOWNLOAD PSYCHOMETRIC PROPERTIES

DOWNLOAD SAMPLE REPORT

NESPLORA

About Nesplora

Nesplora develops **neuropsychological assessment tests using virtual reality**, primarily focused on three areas: attentional processes, memory and executive functions. As of 2024, **more than 95,000 people have been assessed with these tools in more than 30 countries**, and our studies and research are reported in more than 600 academic papers and articles.

The Nesplora tests are available in **15 languages**, and it is possible to set the test audio and report language in two different languages. The tests are compatible with Meta (Oculus), Meta Quest 2 and Meta Quest 3 headsets. All Nesplora System tests comply with the essential requirements set out in Council Directive 93/42/EEC, as amended by Directive 2007/47/EC and with the essential requirements of the EN ISO 13485 standard for quality management systems for medical devices. These certifications allow you to use our tests and certify their value in any clinical, forensic or research process.

nesplora.com/en