



A matter of interest

ADHD and its impact on attention and motivation is often misunderstood but the interest-based nervous system offers a fresh, alternative framework for comprehending this unique neurological profile

Words Emma Green

The term attention deficit hyperactivity disorder (ADHD) may be widely recognised these days but it is often criticised for not reflecting an accurate portrayal of the lived experiences of those diagnosed with the condition. Only in recent decades has the Diagnostic and Statistical Manual of Mental Disorders (DSM) formally recognised ADHD symptoms in adults and yet the three core features it outlines – inattention, impulsivity and hyperactivity – do very little to capture the breadth or nature of the disorder.

The reference to ‘attention deficit’ suggests that those with the condition lack focus when in reality, this couldn’t be further from the truth. “I often say to people that you have an abundance of attention, not a deficit,” says Dr Sarah Carty, founder of ADHDdoc, a GP-led service that diagnoses and treats adults with suspected ADHD. “The issue is that you can’t regulate it.”

A growing body of research is now calling for a more nuanced and informed explanation of the unique patterns of attention and motivation in individuals with ADHD. An example of this is the concept of the interest-based nervous system,

which is finally shifting the dialogue surrounding ADHD from one of deficit to one of difference.

Interest-based vs importance-based nervous systems

The human nervous system is a marvel of complexity, guiding everything from reflexive actions to intricate cognitive processes. While research has previously focused on its biological, chemical and anatomical foundations, more is now being learnt about its role as a driver of neural function and behaviour.

Dr William Dodson, a psychiatrist specialising in ADHD, coined the term ‘interest-based nervous system’ to describe the distinct way that people with ADHD are motivated and how their attention is directed. According to Dr Dodson, those with an interest-based nervous

system are governed by tasks that are engrossing, novel, and enjoyable. However, they don’t respond well to the incentives that usually drive neurotypical people, which are things like rewards, fear of consequences or societal expectations.

“It is thought that if you are neurotypical, which is about 90% of the world’s population, you have an importance-based nervous system,” says Dr Carty. “So, when you do something, it’s because it is deemed important by you, your family or the world around you, such as having a good job or buying a house. If you have ADHD though, you have a different type of nervous system and can find it hard to be motivated by things considered important to neurotypicals.”

ADHD brains often prioritise immediate rewards over delayed outcomes, a trait that aligns with the interest-based nervous system’s preference for doing tasks that feel engaging in the present moment.

“If you have ADHD, you have a different type of nervous system”



Long-term goals can feel abstract and this disconnection makes it harder for those with ADHD to sustain consistent effort on a project or activity over time.

The interest-based nervous system acts as a filter, directing attention toward stimuli, tasks or ideas that are inherently interesting or emotionally meaningful. When a task aligns with someone's passions, the ADHD brain is more likely to react positively and override the typical distractibility of the condition, leading to greater focus and creativity when approaching said task. However, someone with ADHD may struggle to initiate or complete tasks they perceive as uninteresting compared with neurotypicals who find it easier to engage with both fun and monotonous tasks. This lack of response from the nervous system to low-reward stimuli can lead to frustration, chronic procrastination and even avoidance of certain tasks.

"It's the struggle to do the tedious, the mundane and the boring things,"

says Dr Carty. "I often find patients have done huge amounts of research on ADHD before I see them because it's very interesting to them. Yet that same person could not sit down and go through an article that their boss has asked them to read, even though it's important."

Motivators of the interest-based nervous system

Dr Dodson identified four key motivators that stem from the interest-based nervous system and rouse the ADHD brain. He proposed that a task will be completed if it meets at least one of the following criteria within his ICNU framework: that is, if the task is Interesting, a Challenge, Novel or Urgent.

The interest-based nervous system is highly sensitive to intrinsic interest and is naturally drawn to stimuli that spark its curiosity. It could be argued that most people would prefer to

pursue activities that excite them, but for individuals with ADHD, these tasks often take priority, even when neglecting other tasks could result in severe repercussions. ADHDers have a tendency to rotate rapidly through different interests, developing a hyperfixation for something before shortly abandoning it for something else - hence why someone with ADHD is sometimes cited as having a 'graveyard of unfinished hobbies'. For those with both autism and ADHD (AuDHD) however, their passions can be far more enduring and are usually referred to as 'special interests', due to the niche and extensive knowledge they often possess.

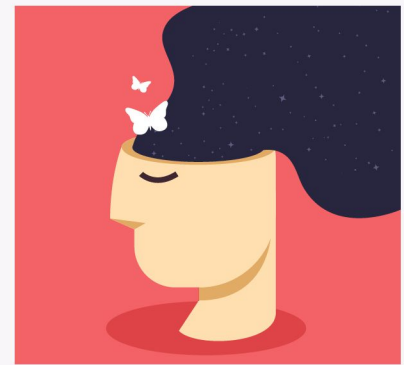
ADHD brains thrive on stimulation, and a challenge or competition can make a task far more attractive to them. A task that involves some difficulty can prompt the interest-based nervous system to go into problem-solving mode, channelling both intense focus and determination to overcome the high-stakes situation because the payoff - an immense

“Novelty is a powerful motivator for the interest-based nervous system”

feeling of satisfaction and pride – is worth the amount of exertion involved. The trick, though, is striking the right balance. Too much difficulty or challenge can be overwhelming to the ADHD brain and can result in procrastination or complete avoidance altogether. Furthermore, if the payoff is too far off into the future or will take a long time to achieve, motivation can soon wane.

Novelty is another powerful motivator for the interest-based nervous system, especially if the task feels new or different from what

has been done before. This isn't just limited to starting new projects – shiny new tools, routines or hacks can revitalise old and mundane habits by injecting some much-needed freshness and inspiration into them, whether that's buying a new planner to get organised, signing up for the gym or trying out the latest cleaning fad. The problem is that novelty is short-lived and while it can spark an initial surge in momentum, maintaining this engagement over time can be difficult once the activity becomes



ADHD and hyperfocus: a double-edged sword

ADHD is often associated with difficulties in sustaining concentration, yet one paradoxical aspect of the condition is its ability to hyperfocus – a state of intense, almost obsessive absorption on a specific task or activity for extended periods. This phenomenon is often described as the polar opposite of the distractibility commonly linked with ADHD. During hyperfocus, attention is laser-sharp, distractions fade away, and time seems to fly by.

“Being able to hyperfocus is an amazing gift,” says Dr Carty. “The issue is that it is very hit and miss as to when you can do it.”

Hyperfocusing has been likened to the concept of ‘flow’, a term coined by psychologist Mihaly Csikszentmihalyi, which refers to the mental state achieved when a person is fully immersed in an activity and experiences a sense of energised focus and seemingly effortless concentration. It is also used to describe someone who is working at peak performance. Flow, however, is a much more controlled and balanced state and is highly conducive to positive wellbeing and productivity, while hyperfocusing can be both a strength (when it's harnessed properly) and a challenge (when it leads to the neglect of other tasks or responsibilities).



repetitive or routine. The interest-based nervous system is always on the lookout for new stimuli and so novelty alone cannot be relied upon to maintain long-term and consistent input with a project or a habit.

Meeting deadlines is a common motivator for most neurotypical people but for someone with an interest-based nervous system, action is only triggered in cases of extreme urgency, high-pressure situations or when facing immediate consequences. The ADHD brain responds strongly to the adrenaline rush created by time pressure, which can provide a much-needed burst of energy in completing a task. This is one of the reasons why those with ADHD tend to procrastinate or leave things to the last minute - while others would crumble under the stress, the ADHDer flourishes, often zoning in and disregarding all other



tasks and distractions. Time-sensitive opportunities provide swift rewards or at least a sense of relief, once the clock has been beaten and the

task accomplished. However, relying on extreme urgency and crisis as a motivator can be detrimental to the ADHDer's physical and mental health. Being exposed to chronic stress can lead to inconsistent performance, anxiety and burnout as well as adverse effects on the cardiovascular, immune, digestive and endocrine systems.

“The ADHD brain responds to the adrenaline rush created by time pressure”



The neurological reasons for the interest-based nervous system

There is increasing evidence, thanks to advances in neuroscience, that shows that ADHD brains deviate from their neurotypical counterparts in their structure, connectivity, and neurochemical balances. These physical variances provide clarification as to why those with ADHD respond to stimuli and regulate attention differently to others - and not because of some kind of character deficiency.

One major difference is the overall structure and volume of the ADHD brain. MRI scans have shown that ADHD brains tend to have slightly smaller overall volume, especially in regions like the prefrontal cortex, basal ganglia, and cerebellum. The development of the prefrontal cortex, which is responsible for executive functions such as planning, making decisions, and impulse control, is often delayed in those with ADHD. This, coupled with its smaller volume and impaired communication between the prefrontal cortex and other brain regions, can lead to difficulties when it comes to regulating attention, emotions, and behaviour.

“The prefrontal cortex is the secretary of the brain,” says Dr Carty. “It’s the organiser, the planner, the part of the brain that prioritises, starts and finishes tasks. That’s the part of the brain that is underperforming and has always been underperforming.”

Another key difference is the discrepancies in the availability of certain neurotransmitters that fuel the brain’s reward system. Dopamine plays a crucial role in motivation and reward processing and when dopamine is released in response to certain stimuli, that stimuli is then associated with pleasure. ADHD brains often have lower baseline levels of dopamine, making it harder



ADHD and procrastination

The flip side of hyperfocus is procrastination, where low-interest or challenging tasks that feel insurmountable are delayed or avoided. Although procrastination is a common human affliction, it can be particularly debilitating for those with ADHD. Issues regarding executive dysfunction, emotional dysregulation, impulsiveness and time blindness that are associated with the condition can exacerbate putting off tasks.

“People describe procrastination as having a block between what they know they need to do and actually doing it,” says Dr Carty. “The whole condition of ADHD is not a knowledge-based problem but a performance issue. ADHDers self-medicate by procrastinating because when a task

becomes urgent, they get a dopamine surge which gets them moving.

However, it can also cause a rise in the stress hormone cortisol and living under that degree of stress all the time is really not good for mental or physical health.”

Someone with ADHD might engage in productive procrastination, where they complete other useful errands instead of tackling the overwhelming task. This might be organising a workspace, doing laundry or cleaning the house instead of working on a more cognitively challenging project or studying for an exam. Low-stakes tasks like these can offer a quick burst of motivation but they can also give a false sense of progress if used to evade stressful yet usually more valuable tasks.

for them to feel motivated by tasks that aren’t immediately interesting or rewarding. Some studies have suggested that this might be due to fewer dopamine receptors in certain brain regions, such as the prefrontal cortex, while other research has proposed that the increased activity of dopamine transporters in ADHD brains leads to a faster reuptake between neurons, reducing its ability to stay in the system for long enough. Another affected neurotransmitter is norepinephrine, which works together with dopamine

to regulate attention and arousal. Dopamine dysregulation can disrupt norepinephrine signalling, compounding difficulties in focus and task engagement.

This shortfall in dopamine can explain why those with ADHD tend to have an interest-based nervous system. Novel and interesting stimuli activate dopaminergic pathways, which reinforce behaviours that lead to pleasurable or fulfilling outcomes. It is understandable then why those with ADHD would prefer to chase dopamine-inducing incentives



Using interest-based motivators to your advantage

Learning to embrace your interest-based nervous system rather than trying to fight against it or fix it can be transformational for those with ADHD. Adapting tasks so that they incorporate intrinsic motivators rather than relying on traditional external incentives, such as rewards or deadlines, can enhance productivity and help ADHDers to fulfil their true potential.

To add interest to an activity, you could pair a tedious task like cleaning with a favourite playlist or audiobook, use fun tools such as colourful stationery or personalise a project by using visual or multimedia elements.

To add an element of competition, you could try 'gamifying' routine tasks by setting personal challenges, assigning points to tasks or logging progress through visual aids like charts and graphs.

To add novelty, try rotating different work environments, study methods or hacks to keep a habit interesting. Try swapping continuously between low-interest and high-interest tasks for variety.

To add a sense of urgency, set a timer, find an accountability partner, or 'body double' with someone else while completing a challenging task.

unpredictable settings, often being able to think quickly and juggle multiple tasks at once. "ADHDers are brilliant in a crisis," says Dr Carty. "They're totally unflappable. Jobs in the emergency services are where people with ADHD can really excel."

The most significant drawback of the interest-based nervous system is that it doesn't always serve the individual's broader needs. Interest-based attention can make it challenging to prioritise tasks effectively. Choosing immediate gratification and interesting activities over long-term goals and necessary but boring tasks, means that day-to-day responsibilities can fall through the cracks. An interest-based nervous system can also encourage ADHD individuals to act impulsively without considering long-term ramifications. This can manifest in abandoning projects or commitments once the novelty has worn off or chasing unhealthy dopamine fixes, such as overspending or living off a diet of junk food.

The interest-based nervous system can also create fluctuations in energy and productivity, which can result in problems in maintaining consistent performance. When the system is thriving, it can produce exceptional results but if it is thwarted in any way, it can result in decreased output.

whenever the opportunity arises to compensate for its scarcity, as opposed to activities or tasks that fail to deliver the same degree of this feel-good chemical.

Benefits and problems of the interest-based nervous system

The distinct neurological wiring of the ADHD brain can prove to be both a remarkable asset and a significant liability. Its ability to hyperfocus on passion projects can foster great

creativity and innovation as well as ground-breaking ideas. Possessing a brain that is built 'different', coupled with interest-driven attention, enables someone with ADHD to engage in outside-the-box thinking, often developing unconventional solutions that others might not have thought of. This may explain why those with ADHD tend to gravitate towards self-employment, as this grants them the freedom and flexibility to dive into their chosen area of interest and to choose how they approach their work.

Another major virtue of the interest-based nervous system is its ability to flourish in chaos. The ADHD brain excels in fast-paced or

Living in an importance-based world with ADHD

For those living with an interest-based nervous system, there can be a considerable mismatch between their reliance on intrinsic interest to sustain attention and effort and the societal systems they must navigate. Traditional school and work environments tend to emphasise structure, routine, and motivators such as grades or deadlines, which can fail to engage the ADHD brain. This misalignment can often result in shame, underachievement and



burnout from trying to fit into a society that is designed around importance-based expectations.

An overhaul is needed, on both an individual and systemic level, in how society views both conventional notions of productivity and the contributions of its neurodivergent members. "I think at the end of the

day it comes down to understanding that some people process the world differently," says Dr Carty. "It's like a different culture. Judging others is much easier than someone working on becoming a better communicator, for example. It's not that the neurodivergent person is lazy; they just need a little bit more checking in

with and more instruction on what is expected of them."

Rather than perceiving ADHD as a flaw, the interest-based nervous system theory provides an empowering narrative for understanding how the ADHD brain works and how it can thrive under the right conditions. Finding ways to incorporate interest-driven approaches, such as allowing personalisation of tasks, could revolutionise education and workplaces for the better and allow those with ADHD to share their gifts, for everyone's benefit.

"The ADHD brain excels in fast-paced or unpredictable settings"