

How evolutionary thinking can help us to understand ADHD

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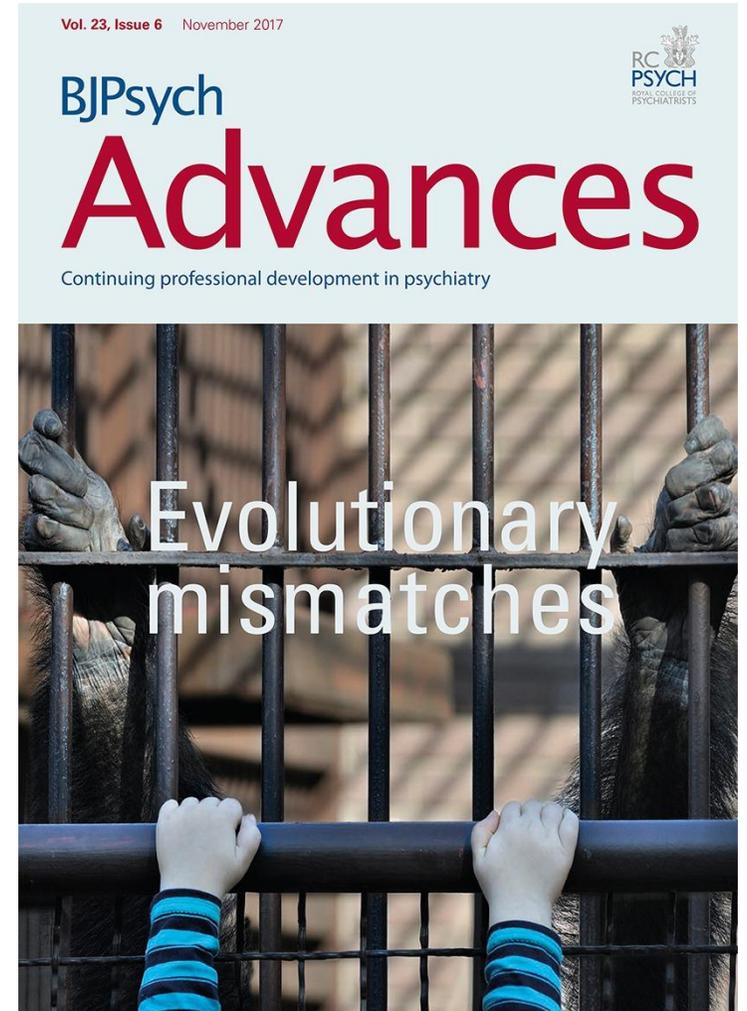
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Evopsychotherapy group at the Tavistock

How evolutionary thinking can help us to understand ADHD

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1. Introduction

- The diagnosis of ADHD is mired in **controversy**, with some mental health professionals seeing it as a developmental disorder, some as genetically driven and others as a result of childhood trauma.
- We believe that the **traditional disease model** is less than ideal for making sense of the effects of early childhood experiences on development and argued that a **model based on evolutionary thinking** can deepen understanding by showing how behaviours tend to occur for reasons that are evolutionarily adaptive, even if these might appear pathological.
- ADHD is characterised by hyperactivity and inattention/impulsivity.



Introduction (continued)

- Our main argument is that the environment of evolutionary adaptedness (EEA) did not prepare children to sit still and concentrate for hours every day and that the difficulties that many children experience can be understood in terms of this mismatch.
- An **evolutionary mismatch** occurs when the environment in which an organism lives is significantly different from that in which it evolved. Traits that were once adaptive, may then become pathological. One example is that humans evolved to survive food scarcity by craving and eating high-calorie foods when these were available. In current environments of plentiful food, this leads to widespread obesity.

2. ADHD classification and identification

- In DSM-4, ADHD fell under “disruptive behaviour disorders”, along with ODD and conduct disorder.
- In DSM-5, ADHD was moved into the category of “neurodevelopmental disorders”, alongside ASD and intellectual disability.
- Studies show that infants with ADHD are more irritable and more difficult to parent. At school age a lower IQ and lower GCSE attainment has been shown, but there is considerable variability.
- Newer studies show that there is not necessarily continuity between child and adult ADHD.

3. Epidemiological issues

- The rates of recognition, diagnosis and treatment varies widely between countries, e.g. 9% in the USA and 0.5% in France.
- Many studies show that younger children in a cohort are much more likely to be diagnosed than older children.
- Cultures that place a higher value on emotion regulation and raise babies with more bodily contact and a quick response to signals of distress, have lower rates of ADHD.
- Despite these variations, it is clear that there is a group of children, mainly boys, who have ADHD and whose longer-term trajectories may be concerning.

4. Genes, epigenetics and adaptation

- According to evolutionary thinking, behaviour traits that have survived and been passed down the generations must have had adaptive value in the past, and possibly still have today.
- One example of this may be that 1/7th of the Ariaal tribe in Kenya have the long version of the Dopamine D4 receptor (*DRD4*) gene, which is associated with novelty seeking. This was an advantage when living a nomadic life (but not when settled).
- We can speculate that such individuals were predisposed to seek greener pastures when danger loomed and hence survive to pass on this variant.

Genes, epigenetics and adaptation (cont.)

- Carriers of the long-repeat allele of DRD4 gene are more likely to show ADHD symptoms and are more sensitive to the effects of harsh parenting, leading to externalising behaviours.
- Adoption studies have shown that sensitive and attuned parenting can attenuate symptoms in some children.
- Epigenetic research is showing us that some children are more susceptible to the environment (good or bad) than others.
- Experiences and genes, nature and nurture interact to produce their effects.

5. Environmental influences

- Children are calmer when their emotional and physiological states are regulated by an attuned adult.
- Traumatic childhoods are predictive of impulsivity and poor executive functioning.
- Life history theory explains how less trust and more risk-taking may be adaptive for abusive homes or violent neighbourhoods. This strategy ensures short-term survival, though at a cost to long-term physical and mental health.
- There is an overlap between “biological ADHD” and adversity-induced ADHD-type symptoms

6. Gender-based differential rates

- Rates of ADHD are typically much higher in males than females.
- One possible evolutionary explanation is that males had to be more risk-taking to compete for mates, as a higher proportion of males than females fail to have children and pass their genes on.
- Also, newborn boys are more sensitive than girls to the effects of suboptimal care and are more demanding. This may result in angrier and less sensitive parenting. Some research has shown that this is child-specific, rather than parent-specific.

7. Social changes

- Even a hundred years ago, most boys would have learnt a trade from their father or another relative.
- This all changed with the professionalisation of schooling
- There is now a **mismatch** between the strengths of children with ADHD, i.e. their tendency to explore, to challenge and to try out new ways of doing things – and their environment (today's schools).
- Most schools, especially primary schools, can be seen as feminised institutions, the large majority of teachers being women.
- It is likely that schools favour the more passive, acquiescent behaviours that are more typically found in girls.

8. Treatment

- Medication may help to ensure better educational outcomes and less involvement in drugs and youth offending.
- However, many clinicians argue that normal children are being medicated to make them “less naughty”.

9. Ethics

- It does not really matter whether ADHD is a genetic or behavioural or neurodevelopmental disorder and whether it is under- or overdiagnosed. Evolutionary thinking helps us see that the real question is: **Should a psychiatrist prescribe medication to help a child fit into a environment that is not ideal?**
- It is questionable whether medication prescribing is ethically justifiable when resources are lacking to change the home/ school environment.
- There is also often a clear conflict of interest between what is best for the child and what is easiest for parents and teachers.

Vignette: changing the environment

- Alex is 17 years old. He was diagnosed with ADHD at age 8 and treated with stimulant medication until he finished his GCSE's at age 16. He was able to stop using medication when he went to a **football College**. He explained that at College, they do 2 hours of football training and then break for an hour of Maths, before doing another 2 hours of training and then having a lesson of English. He said that this worked very well for him and he was able to sit still and concentrate without needing medication in these circumstances.

Vignette: changing the diagnosis

- Nine-year old Joe, who was on a Child Protection Plan due to neglect by his drug-abusing mother, was treated with stimulant medication for ADHD. After he was placed in foster care, his school work improved dramatically and he was able to stop his medication. The reason for this was that the “breakfast” his mother had assured professionals she was giving him with his stimulant medication before school, consisted of a can of caffeinated **energy drink**.

Vignette: medicate the child

- Mohammed, 14-years old, was on the verge of exclusion due to his disruptive behavior in class, fighting in the playground and rudeness to teachers. He had been diagnosed with ADHD at age 8, but his parents had been opposed to medication. The family now agreed to a trial of **stimulant medication**, which was a resounding success. The boy explained how he was now able to concentrate and think before he acted. He thrived on the positive feedback he was getting at school and his behavior and attainment improved.

Vignette: open question

- Seven-year old Alfie was treated with short-acting Methylphenidate to cover him at school, but **neighbours** in the flat below complained about his jumping around on evenings and weekends.
- His mother was concerned as the neighbours were putting pressure on her and had made a complaint.
- What would you do?

10. Conclusion

- An evolutionary perspective, which points out the mismatch between biological predispositions and current environments, including schools, has a lot to add to debates about ADHD diagnosis and treatment.
- **Understanding ADHD as a biological variant in some individuals that has adaptive value for living in unpredictable situations, may help shift perceptions of the child being “naughty” to someone being caught in an evolutionary mismatch.**
- Over the longer term we need to rethink how schools are run.
- Attempts should be made to adapt the environment before resorting to medication to adapt the individual.

תודה
Dankie Gracias
Спасибо شكراً
Köszönjük Merci Takk
Grazie Dziękujemy Terima kasih
Ďakujeme Vielen Dank Dèkojame
Kiitos Täname teid 谢谢
Thank You Tak
感謝您 Obrigado Teşekkür Ederiz
Σας ευχαριστούμε 감사합니다
Bedankt Дěkujeme vám
ありがとうございます
Tack

Please email annie.swanepoel@hpft.nhs.uk for a pdf of the paper for more details and references.