

Is ADHD adaptive or non-adaptive behavior?

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Abstract

The evolutionary approach to the issue of ADHD derives from the assumption that what is regarded as a pathological phenomenon today was once an adaptive response to the conditions of life in the ancestral stages of human development. The paper argues against this conception on the basis of the clinical picture of ADHD. The author believes that in the previous “natural” conditions the ADHD syndrome was even more of a maladaptation than in the “protective” conditions of present-day life.

The Evolutionary Approach to ADHD

On the pages of this journal (2002; 23 (Suppl.4): 39–45), Charles Crawford and Catherine Salmon have posed the question of whether some nosological units considered to be pathological today should not instead be viewed as the remains of man’s purposeful adaptation to life conditions somewhere deep in our evolutionary history. As examples they give psychopathy, mental anorexia and the ADHD syndrome (attention deficit/hyperactivity disorder). For each of the three “disorders” they find an explanation in evolutionary theory. It is ADHD that I would like to comment on from the point of view of a clinical psychologist.

In the case of ADHD the authors hold that the evolutionary model may account for the discrepancies in findings traditionally cited in the literature far better than the symptomatic description given in DSM-IV, that the evolutionary model provides a testable hypothesis and that it elucidates the relationships between health and disease. Their idea is roughly as follows: ADHD is characterized by transient concentration, hyperactivity and impulsiveness. In the extreme conditions of prehistory, man’s survival required hypervigilance, rapid-scanning, quickness to move, hyperactivity and response-readiness. This would have been an advantage “under the harsh conditions of the frozen steppe or humid jungle”. In different environments however,

with societies becoming more industrialized and organized, “problem-solving and analytic strategies, restraint of impulsivity, and the controlled deployment of energies” would more and more become the order of the day. Still the population continues to retain the genetic variation of these original traits, which is reflected in the development of this kind of behavior. Crawford and Salmon’s conclusion is that what is adaptive in one type of environment may no longer be adaptive in another.

Symptomatic Diagnosis versus Etiological Diagnosis

Their explanation sounds plausible enough and the last sentence may no doubt be endorsed without reservation. Nonetheless I can’t help feeling that there is something amiss. It will do no harm if we first make a short review of the story of ADHD. As a term, ADHD is a relatively recent coinage which replaced the previous MBD or minimal brain dysfunction. It has its advocates, but also many critics, myself included, who point out its disadvantages. To begin with, ADHD, as in fact any descriptive or symptomatic diagnosis, essentially says nothing more than what can be seen at first glance. The International Classification, in order to distinguish a normal condition from a pathological one, then must look for criteria that would express

that only a certain, especially marked type of behavior deserves this particular diagnostic label. It is necessary to section off one extreme (oddly enough not the other one) from some kind of continuum. But why section off anything at all in the first place if a certain behavioral trait represents a continuum distributed in the population according to the Gaussian curve? The point is that things are somewhat different! Clinical experience shows that the extreme described today as ADHD does exhibit certain signs of pathology.

I still believe that the term MBD was factual, pertinent and practical, although it of course could not entirely avoid the difficulties of delimiting (still normal) function and (no longer normal) dysfunction. There will always be fuzzy borderlines. However the term MBD was definitely much easier to use when presenting arguments in front of the lay public (i.e. even teachers). It made it possible to explain that we are dealing with a special (unusual, peculiar) function of the brain, for which neither school nor the parents or the child alone were responsible, and so there is no use blaming anyone, but instead we have to look for help together.

Over a time things have cleared up due to using (as I believe) the clinical finding, including psychological tests, as a starting point and due to taking account of etiology and not only external manifestations. In clinical practice all these cases of encephalopathy, dysfunction and ADHD obviously look different from what they appear to be at the taxonomist's table.

Non-adaptive ADHD

Under normal circumstances the “unknown” equals the “dangerous” for the child. The adaptive mechanism is anxiety which tells the child (from the eighth month of life onwards), “don't go there!”, “keep close to your mom!”, “watch out for the unfamiliar!” By contrast, children with ADHD are indifferent to dangers – they are difficult to watch over, they will rush toward anything “unknown” without hesitation and this kind of behavior goes way beyond the age limit of three years when in prehistory they presumably must have been largely independent so that the mothers could be free to look after new offspring. Anxiety as a behavioral corrective does not apply to these children – they simply expose themselves to dangers to an exceptionally large degree. Under natural conditions they would have been caught by a leopard, bitten by a snake, got lost in the jungle, drowned in a lake – and even should they have survived all this, their reproduction chances were certainly not very high.

In addition, the “impulsive” child with “transient concentration” coming under the diagnosis of ADHD is anything but hypervigilant. On the contrary, the child habitually “acts before he or she thinks”, cannot distinguish a relevant stimulus from an irrelevant one, “has” to respond to everything that his senses “come up against”, is “addicted” to stimuli and cannot switch them off, and so is “defenseless” against them. In other words, he or she is at increased risk in this respect. Surely enough, this is true of the harsh natural condi-

tions of our ancestors more than of the civilized conditions of today.

Hyperactivity does not mean fast and precise advance or fast and organized retreat – it involves motor restlessness which is very difficult to keep under control. Such restlessness often deserves the attribute “tremorous”. It certainly does not allow one to hide somewhere quietly, to stay silent and motionless, to wait patiently, etc. By contrast, such a child arouses and attracts the attention of his surroundings – as it no doubt would attract that of a predator. In his environment such a child acts as a disturbing element and exhausts those who are there to guard and protect him, even more those who are to teach him something. Hyperactivity does not increase motor efficiency, it serves to decrease it. True, a hyperactive child will climb everywhere, but he will also fall down from there.

The syndrome ADHD does not expressly include physical clumsiness today (which was still part of MBD), but in clinical practice it is of course in evidence. Actually everywhere we look we find difficulties: in motor coordination, in keeping balance, in right-left orientation etc. There are neuropsychological diagnostic schemes in use to measure this. For many of these children walking along a narrow path or throwing and catching something presents an insurmountable difficulty. They are far more prone to accidents and more frequently subject to medical care than other children. Moreover, they exhibit difficulties in articulation as much as in expression and communication – for these problems diagnostic schemes have also been developed. Physically inept individuals with communication problems would hardly have had better chances to succeed in reproduction competition with skilful, able and communicative people.

Finally, the syndrome MBD (and, to a perceptibly increased extent, the symptoms in ADHD children) included strikingly uneven distribution in the efficiency of individual mental components. It is as if, for instance, something has dropped out from the structure of the cognitive abilities, something has not matured, something has atrophied and, on the contrary, something has become overgrown (both in compensation and without it). There are children who cannot cope with verbal tasks, and there are children who are incapable of understanding any visual model. The idea of their finding their bearings in a varied space is absolutely out of question. This certainly does not sound like an adaptive evolutionary advantage. I would again regard it as the very opposite. What is far more likely to be of advantage in the frozen steppe, or a jungle, or today's big city, is a harmonious distribution of all functions and not such chaos in abilities and disabilities.

Clinical experience clearly supports the idea that we are dealing not only with an end section of a continuum, but with something “more”, i.e. a certain pathology the cause of which may be looked for in a mild damage of the brain, in genetically conditioned peculiar functioning of the brain, in short somewhere in deep biological structures.

Adaptive ADHD

True, the world is full of “lively” and “highly active” children, inattentive children, or children precipitous in their reactions. We can come across them at every step. That is a different story, though. Anyone who has seen these children and ADHD children will never lump them together. The parents often say that their child cannot concentrate on “anything for a moment”. But when we ask how long the child manages to play with something, how long he or she can manage to listen to a story or watch TV, we can see the difference at once. In one child it is a matter of seconds, in another it is half an hour, an hour or even longer. At school, even normal “highly active” children may be a problem, but we have different recommendations, different advice, different protective and supportive measures for them than for children with MBD or ADHD.

These basically healthy, agile and bright children may well be one of the “adaptive” genetic variations surviving from prehistory until today. Why not? But they are not children with ADHD (i.e. ADHD that deserves its place in DSM-IV), for although ADHD children are capable of survival and acceptable social integration in our contemporary refined and “handicap-friendly” environment, their chances in the prehistoric conditions would be rather slim. In sum, I think that we may turn Crawford and Salmon’s argument around and say that ADHD is an acceptable adaptive behavior today, whereas in prehistory it was entirely non-adaptive.

Conclusion

Why have ADHD children not disappear altogether over the millennia? (In fact, their number appears to be increasing.) The answer is that although this type of behavior is due to genetic mechanisms, there are other mechanisms at play “over and above” the genetic factor. These other mechanisms, damaging or adversely affecting the function of the brain, are constantly with us. Actually they have been selectively dogging each new human generation from prehistory until today in much the same way, I think, as, for instance, cerebral palsy or congenital blindness and deafness. Also these affections are not just one extreme of the continuum of human agility or sharpness of hearing and vision, but involve something “more”. In the Pleistocene period children with such a handicap would have, more often than today, simply not survived – and if they did, it was only thanks to exceptional protective and supportive care for its offspring which human society was so extraordinarily endowed with in its evolution. At present, however, in our contemporary cultural environment these children live a relatively acceptable life on the whole. Compared with children with severe motor or sensory handicaps, ADHD children’s “extra” burden is relatively small – but it is not difficult to imagine that in the Pleistocene period even this small non-adaptive “extra” was for its bearers considerably greater burden than is the case today.

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