DOCUMENT SUMMARY

This document is a foundational scientific article by Jensen et al. (1997) that proposes an evolutionary and adaptational framework for understanding **Attention-Deficit/Hyperactivity Disorder (ADHD)**. Instead of viewing **ADHD** solely as a deficit or dysfunction, the authors argue that its core traits—inattention (as rapid scanning), hyperactivity (as increased motor exploration), and impulsivity (as quick response)—can be seen as adaptive responses that would have been advantageous in ancestral environments. They introduce the concept of a "**response-ready**" individual, optimized for dangerous or resource-scarce settings, who may be poorly matched to modern environments like classrooms. This perspective reframes **ADHD** as a disorder of adaptation or "fit" rather than a simple pathology, with significant implications for treatment and research.

FILENAME

Jensen_1997_research_article_adhd_disorder_of_adaptation

METADATA

- **Primary Category**: RESEARCH
- **Document Type**: research_article
- **Relevance**: Core
- **Update Frequency**: Static
- **Tags**: #adhd, #evolutionary-psychology, #adaptation, #response-ready, #neurodiversity, #environmental-fit, #child-psychiatry
- **Related Docs**: This paper's adaptational framework complements the sociological perspective in "Milton_2012_research_article_double_empathy_problem" and provides a theoretical basis for the strengths-based approach in "Neurodivergent Cognitive Strengths and Dimensional Assessment."

FORMATTED CONTENT

Evolution and Revolution in Child Psychiatry: ADHD as a Disorder of Adaptation

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ABSTRACT

Current knowledge about early plasticity and children's responsiveness to environmental modifications as well as the atheoretical nature of current nosological systems necessitate alternative models to explain the phenomena of childhood behavioral and emotional disturbances. Evolutionary biology provides one such framework... Through an evolutionary biological lens, some mental disorders are better viewed as an adaptive response to early pathogenic environments and/or reflect the

optimization of brain function to some environments at the cost of poorer response to the demands of other environments. As an example, the authors examine **attention-deficit/hyperactivity disorder (ADHD)** in relation to evolutionary theories of psychology and biology and clarify the potentially adaptive nature of characteristics of inattention, impulsivity, and motoric hyperactivity, depending on the nature of child's environments.

Introduction

Despite the popularity and widespread use of the **DSM-IV**, concerns persist among clinicians and the general public about the applicability of "mental disorder" status to some described conditions. Early environmental experiences impact structural and functional aspects of cortical development... consequently, some **DSM-defined "disorders"** plausibly arise from an adaptive response to early pathogenic environments (trauma, neglect), while others result from the optimization of brain function to early environments that are inconsistent with the demands that the child must meet in later environments.

Evolutionary Biology and Human Adaptation

When human mental and behavioral phenomena are viewed from this theoretical perspective, a core assumption holds that natural selection has shaped the mental mechanisms available to our species and that these mental mechanisms enhance adaptation and survival.

> Thus, many emotional and behavioral responses (particularly if relatively common-place within a given species) may not just be "symptoms" of disorders, but they might instead reflect adaptive responses of the organism to environmental demands. From this vantage point, the human brain can be viewed as an "adaptation machine," evolved to fit our species to a range of environments.

Application of Evolutionary Models to ADHD

Given the current estimated frequency of **ADHD** (3% to 5%), it is unlikely that such a "disorder" could be as prevalent in the human species if not maintained within the species by selection forces that conveyed certain advantages to some **ADHD** characteristics or other associated traits. **ADHD** is characterized as a classical triad of symptoms: inattention, hyperactivity, and impulsivity... we suggest that each of these "symptoms" can be adaptive in some instances.

- **Increased Motor Activity (Hyperactivity)**: For an organism to adapt successfully, it must constantly explore the environment for threats and opportunities. From this perspective, increased motor behavior and hyperactivity may be useful (particularly in ancestral hunter-gatherer environments) to assist in effective foraging, spotting of new opportunities, anticipating dangers, etc.
- **Attentional Processes (Scanning and Rapidly Shifting Attention)**: Vigilance is necessary to monitor dangers and threats. Overfocused attention could be

quite maladaptive in high-threat or highly novel environments... Thus according to our conceptualization, animals who are preyed upon or are in environments with a high ratio of predators to prey are more likely to have increased scanning behaviors.

- **Impulsivity**: For purposes of our thesis, we define impulsivity as an organism's quick response to environmental cues while not considering alternative responses... The organism that does not quickly pounce on a potential prey or dodge a potential predator may not get another chance. The relative danger of false-positive responses... could be easily outweighed by the "downsides" of missing a critical cue in dangerous or resource-scare environments.

Nature of Ancestral Environments

Converging evidence from anthropology and archaeology indicates that the human species diverged from forebears by living for a few million years in hunter-gatherer societies. Foraging was essential... threats abounded. Yet human culture and society have changed dramatically in the last 10,000 years, more rapid by far than the pace of evolution of the human genome. A lag in remodeling the genome means that our species' brains still retain the propensity to adapt to environmental features as these were before the emergence of recent civilizations.

We suggest that ancestral environments ranged along several continua, including safe versus not safe, resource-rich versus impoverished, and time-optional versus time-critical. At one end of these three continua (which we will term "**response-ready**"), humans' survival depended on being (1) hypervigilant... (2) rapid-scanning; (3) quick to pounce (or flee); and (4) motorically "hyperactive". The "**response-ready**" individual would likely have been advantaged under the brutal or harsh circumstances of the frozen steppe or humid jungle, whereas the excessively contemplative, more phlegmatic individual would have been "environmentally challenged."

As society has become increasingly industrialized and organized, "**response-ready**" characteristics may have become less adaptive... Success in such environments becomes increasingly measured by the ability to demonstrate (1) problem-solving and analytic strategies, (2) restraint of impulsivity, and (3) the controlled deployment of energies. For purposes of our argument, such an individual will be termed "**problem-solving**."

Clinical Implications

> Viewed from an evolutionary, adaptational perspective, our current school environments could hardly be more difficult for the "**response-ready**" child. Most of them demand attentional focus and motoric passivity, while presenting complex stimuli.

Individual variations along the dimensions of "**response-ready**" versus "**problem-solving**" may coincide with environmental variations in a way that produces either good or bad fit for a particular child.

In reframing the child who has **ADHD** as "**response-ready**," experience-seeking, or alert and curious, the clinician can counsel the child and family to recognize situations in modern society that might favor such an individual, both in terms of school environments, as well as future career opportunities, e.g., athlete, air-traffic-controller, salesperson, soldier, or entrepreneur.

In considering treatments for a given child, clinicians should be aware that the child's **ADHD** “symptoms" may be adaptive in some settings but not others. From this perspective, the complaints of some children and parents that stimulant medications make the child seem too sedated, less social, or "not himself" are understandable.

Research Implications

A major implication of the above **ADHD** model suggests that more study of the individual components (attention, motor activity, and impulsivity) as specific traits may be warranted. Breaking the syndrome into its specific behavioral components might more easily allow cross-species comparisons of these traits.

We need further study of the effects of children's early environments on the development of "**response-ready**" traits, as well as the malleability of these characteristics. In this context, what is the impact on children's attentional systems of watching television and playing video games?

Our hypothetical model of **ADHD** suggests that more studies of the boundaries between illness and health, and what constitutes a "disorder," are needed. Indeed, recent findings from the largest genetic twin study of **ADHD** conducted to date suggest that **ADHD** is best characterized as a trait distributed normally throughout the population (Levy et al., 1997). But at which point should a mismatch between persons and environments be designated as a medical psychiatric disorder?