



# Attention deficit/ hyperactivity disorder

Impaired sustained attention



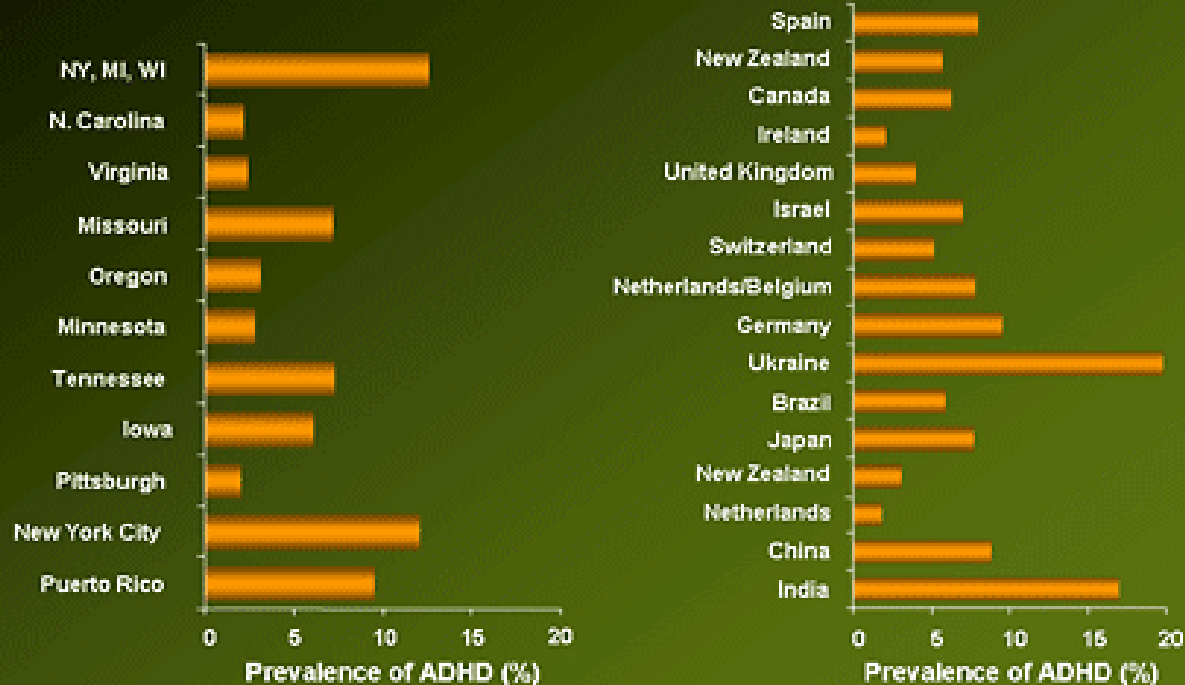
Behavioral hyperactivity



Impulsiveness

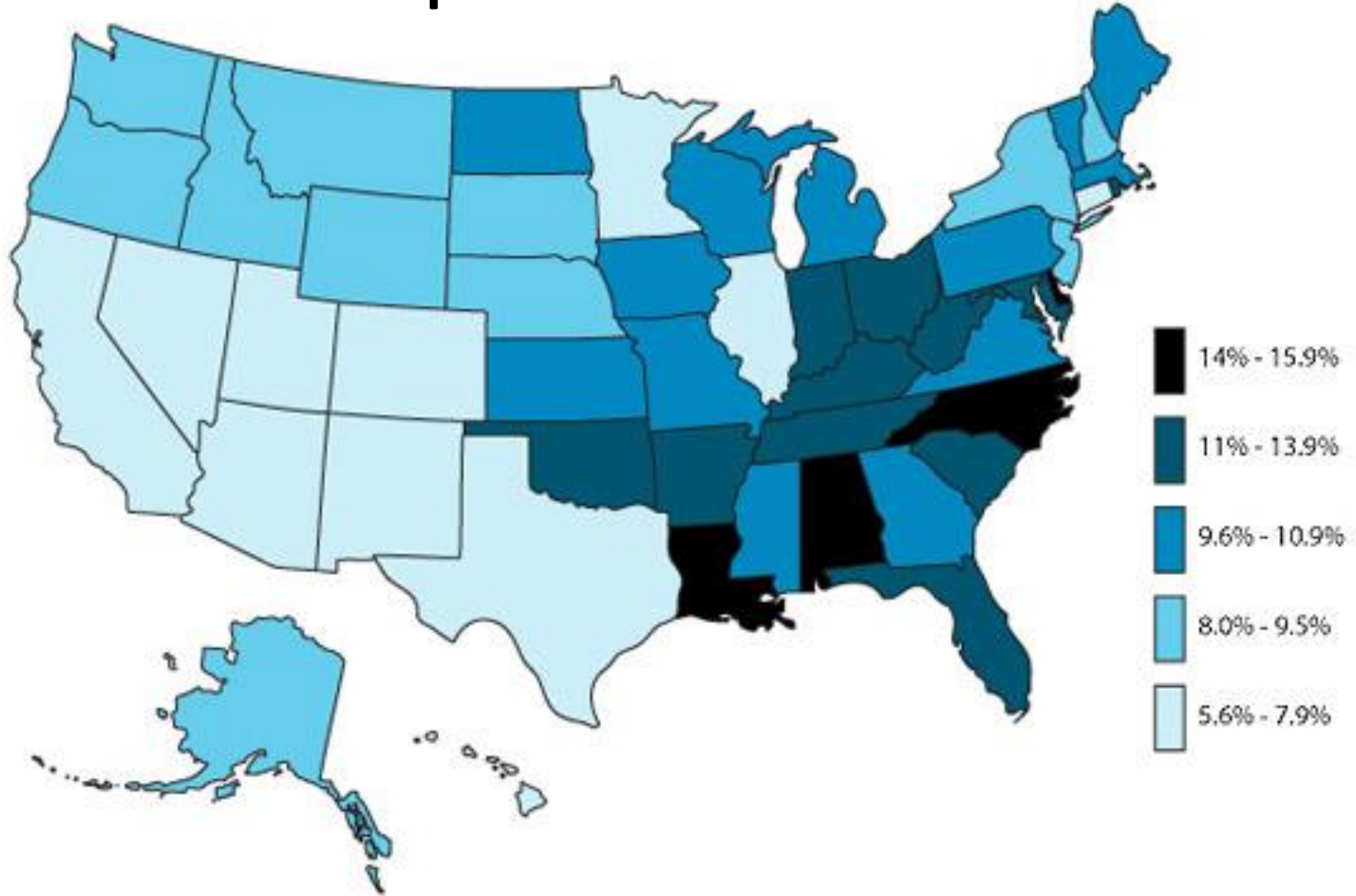


## Worldwide Prevalence of ADHD in Children



American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders*, 4<sup>th</sup> ed, text revision, Washington, DC: American Psychiatric Association; 2000:85-93; Biederman J et al. *J Nerv Ment Dis*. 2004;192:453-454. Faraone SV et al. *World Psychiatry*. 2003;2:104-113.

# US prevalence of ADHD



# ADHD = several disorders of different etiologies?

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Inattention without hyperactivity/impulsiveness (ADD)

Impulsiveness, impaired sustained attention  
and hyperactivity (ADHD)

???????









## Free fatty acids in the brain

Brain growth and development

Influence on numerous neuronal processes, e.g. expression of proteins involved in signal transduction, neural plasticity and learning

Modulation of neuronal membrane which can influence membrane receptors, neurotransmission and signal transduction

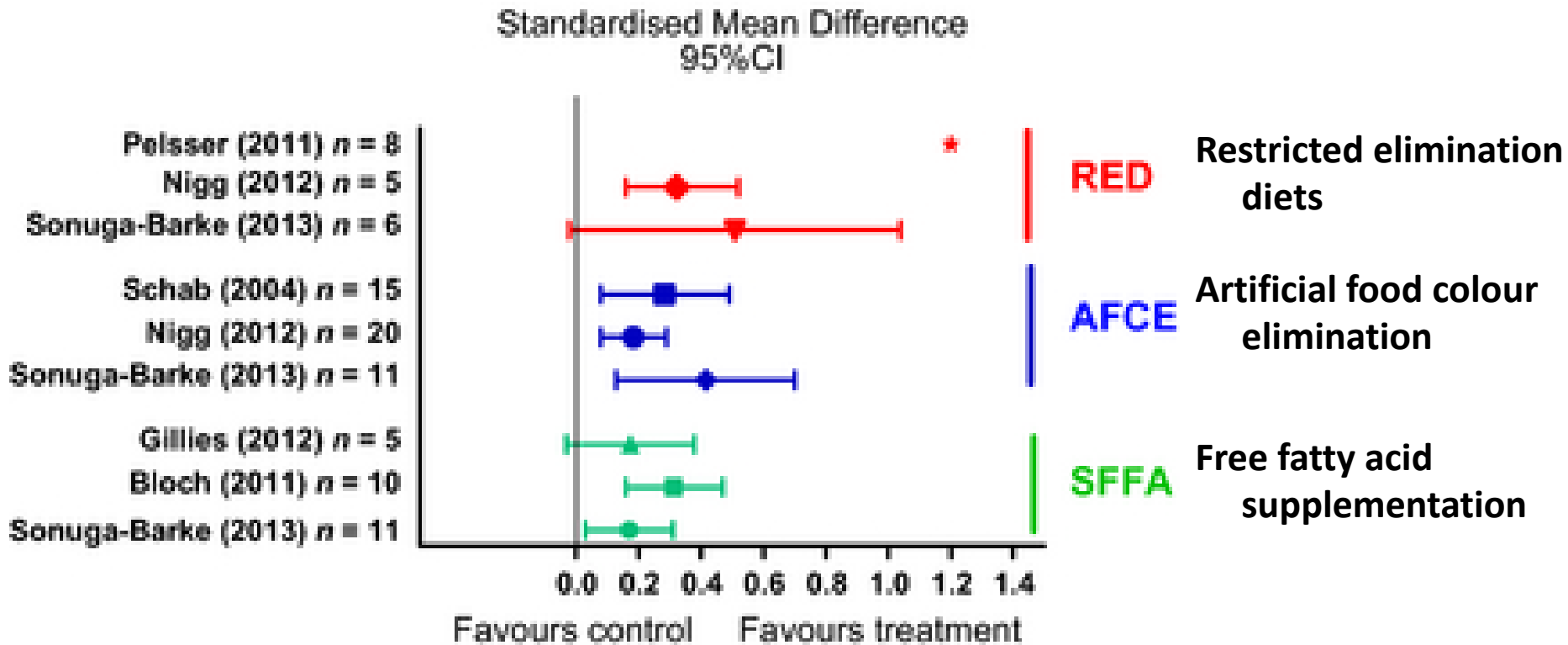








# Meta-analysis effect sizes for dietary treatments of ADHD





## Summary

### Restricted elimination diets

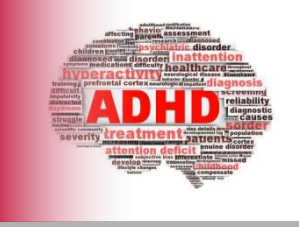
may be beneficial for children with a history of adverse reactions to food

### Artificial food colour exclusion

may be beneficial for children that adversely react to food colours

### Free fatty acid supplementation

average effect size of three studies 0.2  
i.e. small effect



## Future directions

Large-scale randomized controlled trials

No selection of children with ADHD on the basis of previous responses to food stuffs

Blind assessment of children's behaviour

Control for non-specific treatment effects



# “Omega-3” Fish Fingers



## **Definition of Functional Food**

Functional Food is a natural or processed food that contains known or unknown biologically active compounds, which, when in defined quantitative and qualitative amounts, provides a documented health benefit and as a result, becomes an important source in the prevention, management, and treatment of chronic diseases of the modern age.

*Functional Food Center/Functional Food Institute*





