

# *The Effect of Diet on the Mental Performance of Children*

## Information for Researchers

There is evidence that early nutrition may affect mental performance. Studies exist on the potential beneficial effects of long chain-polyunsaturated fatty acids (LC-PUFAs) and further single or multinutrient supplementation on the mental performance of infants and children. However, there is still a lack of clarity and consensus on their role in neurodevelopment, mental performance and mental illness.

Nutrimenthe is a five-year project part-funded by the European Commission that address these issues. It draws together a wide range of scientific disciplines from over 20 institutions in Europe and beyond to address the role of specific nutrients in the mental performance of children, including B-vitamins (B2, B6, B12 and folate), iron, zinc, protein and especially LC-PUFAs, as their role in mental performance is much debated in Europe currently.

The children addressed by Nutrimenthe range in age from foetal stage to early childhood and are drawn from large well characterised population based prospective studies. Data being collected includes the dietary intake of pregnant mothers and of children by Food Frequency Questionnaires, food diaries, biochemical measurements of micronutrient and fatty acid status in pregnant mothers and in children, physical activity, anthropometric measurements and brain imaging. Mental performance assessments are being carried out using a battery of neuropsychological tests that have been harmonised for use by a number of Nutrimenthe partners.

Nutritional status may not only be influenced by diet but also by polymorphisms in certain genes. Nutrimenthe will determine the polymorphisms of the fatty acid desaturase (FADS) gene cluster and the methylenetetrahydrofolate reductase gene (MTHFR) in children taking part in the population studies to establish their role in relation to mental performance.

Project progress, including abstracts from published research and registration for our newsletter, are available on the project website: [www.nutrimenthe.eu](http://www.nutrimenthe.eu)  
Or, write to Tania Anjos [nutrimentheproject@yahoo.es](mailto:nutrimentheproject@yahoo.es)  
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Currently, there are no specific recommendations for LC-PUFA intake in childhood thus Nutrimenthe includes a multicentric study of phenylketonuria (PKU) patients with their extremely low habitual LC-PUFA intake, to study the influence of LC-PUFA supplementation and to extrapolate the findings to establish quantitative requirements for children within the general population.

In addition Nutrimenthe will address parent's perceptions of the relationship between children's diet and their mental performance as there is little published research on this subject. Also, Nutrimenthe is examining the available literature on nutritional intervention studies and will address the economic consequences of improving mental performance.

Over the coming years, Nutrimenthe expects to generate a wealth of new information on food intake from epidemiological and nutritional intervention studies and to link this data to biochemical measurements, to mental performance measurements and brain imaging studies in a large population across Europe.

Nutrimenthe aims to establish positive dietary recommendations to be made for the European population as a whole for a number of nutrients especially for LC-PUFAs and to improve public knowledge, especially that of parent's, teachers and industry laying the basis for appropriate health claims about how diet affects mental performance in children.

