

Diet & Rewards from Eric Jensen's Brighter Brain Bulletin

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PART ONE: Recent Discovery

Is your school cafeteria helping or hurting your kid's academic performance? Many who are still unwilling to read the research claim that what you eat doesn't matter very much. They are wrong. Many early studies were not done with a strong experimental protocol or they were done on malnourished kids. But more recent ones have used the "gold standard in research (blind studies, large sample sizes, cross-over design) and they have found that school nutrition does matter.

Recently, two large and high-quality studies (both randomized, double-blind), used a total of 780 typical, healthy school aged children. All were given either a combination of vitamins and minerals, a supplement of omega-3 essential fats EPA and DHA, or the vitamins and minerals with the omega-3 fats, or a placebo on 6 days a week for 12 months. At the start of the trial, the children were tested for blood levels of all of these nutrients, all of which significantly improved when they were retested after 12 months. The schoolchildren on the vitamins and minerals had significant improvement in tests of verbal learning and memory. (Osendarp SJ et al., Am J Clin Nutr. 2007).

Another study was testing diets for an eight-week trial comparing a low carb high fat diet (LCHF) with a conventional high carb low fat (HCLF) weight loss diet. Researchers found that the people on the low carb diet lost more weight than those on the low fat diet. But they also had better processing speed in the tests--their brains worked faster! (Halyburton AK et al., Am J Clin Nutr. 2007). Hint...DO NOT listen to the naysayers. They are behind in their science. Yes, nutrition does matter!

PART TWO: Applications and Contributions

There are many ways educators can reduce the effects of the poor diets that some kids are eating these days.

1. Role model. Eat well and talk to kids about your own decisions in class when it's appropriate. Avoid being "too preachy" but remember that you are an authority figure to most kids.
2. Include nutritional information to parents in any of the open houses or school newsletters or school websites. My favorite book for kids is *Brain Foods for Kids* by Nicola Graimes. For adults, learn about how nutrition affects your own brain in *The Edge Effect* by Eric Braverman.
3. Do class research projects. Divide your class randomly in half. Each does something different. Use simple tasks to measure pre and post. Let students discover the difference in their own bodies and minds.
4. Include nutritional information in units on science, the body, health and physical education. There are plenty of ways to slip it into the curriculum.
5. Works with the school cafeteria staff. Provide a few snippets from the best books. Let them ask you for more information.

PART THREE: Recent Discovery

The importance of resisting the attraction of small immediate rewards when larger rewards are available after a delay was evidenced from the famous Stanford "marshmallow test" experiment, in which 4-year-old children could receive one marshmallow immediately or two marshmallows if they waited a few minutes. Ten years later, those who resisted the immediate temptation were more academically and socially competent than their more impulsive counterparts (Shoda, et al., 1990). At your school, the patient kids will be able to focus on the long-term, not immediate rewards.

First, this study was done with real people, eating real foods. Second, the study was trying to get an effect, so the diets were strongly weighted towards either carbohydrate or protein diets. Nine overnight-fasted subjects consumed a carbohydrate-rich (70g carbohydrate and 5g protein) for their first sample. Then days later, they had a protein-rich (15g carbohydrate and 47 g protein) breakfast. Same subjects, diet was switched again (the cross-over design) to keep the data clean. Blood samples collected at baseline and after 40, 80, 120, and 240 min. for the various levels of glucose, tyrosine or tryptophan. Two things emerged from the data: the effect is real and significant and 2) your meal may have to be strongly skewed towards either protein (maximum alertness) or carbos (greater calm) to get the effect.

This new study shows that the ability to delay gratification is correlated with serotonin levels. In fact, low-serotonin levels increase impulsivity, as indicated by a greater quantity of immediate reward choices. Moderate to high serotonin levels led to an increase in the ability to go with delayed rewards. High-serotonin levels, however, produced no detectable changes in the quality of the reward choice (it doesn't make you smarter) Of particular interest in this human study, was that they were manipulating serotonin levels through diet (the ingestion of either tryptophan--a dietary precursor to serotonin) or a placebo drink. This suggests to you that the foods you eat and the foods you feed to your kids can influence how well temptation is resisted. More protein usually means more active and less thoughtful. But more complex carbos or tryptophan in the diet can mean better ability to resist temptations!

Source: Nicolas Schweighofer, Mathieu Bertin, Kazuhiro Shishida, Yasumasa Okamoto, Saori C. Tanaka, Shigeto Yamawaki, and Kenji Doya (2008) Low-Serotonin Levels Increase Delayed Reward Discounting in Humans

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PART FOUR: Applications and Contributions

What are parents feeding kids? What are schools feeding kids? You cannot ingest serotonin directly. You have to either ingest the raw materials for making it, or stimulate the production of it somehow. The raw material for making serotonin is an amino acid, tryptophan. Foods with higher tryptophan levels include bananas, milk and turkey.

Dietary supplements are available at health food stores. Tryptophan may be purchased separately or bought in forms such as 5-HTP or St. John's Wort. All safe and natural. BUT always check with a doctor especially IF you are taking any other medications. For example, you do not want to take a serotonin agonist (boosts serotonin) AND be taking another drug, which is a serotonin antagonist (lowers serotonin). You also do not want to raise serotonin if it might undermine another medication you are taking. Interestingly, complex carbohydrates may also enhance tryptophan levels, but they do it indirectly.

Actually, I was thinking of this research for parents and their kids for the upcoming summer. If parents make some alterations in their kid's diets, they may get less impulsive behaviors. In addition, this dietary change may help support those who say a specific diet can reduce the affects of AD/HD. One of the AD/HD symptoms is impulsivity, so this may be a partial, non-medication key to solving that puzzle. This study is one of hundreds of top quality, peer-reviewed studies that strengthen what we know about the food-behavior link. Just another bit of evidence that suggests that what you eat does influence your behaviors.

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info@jlcbain.com. Be sure to include your full name, school and city/state/country.