July 2015 **19th Year of Publication** Vol 18.07

The science & art of living the way nature intended

The Bond Briefing

www.thebondeffect.com | Subscribe: $18 for 12 monthly issues

GEOFF BOND

RATIONAL EVIDENCE-BASED COMMENT FOR THE GENERAL PUBLIC & HEALTH PROFESSIONALS. WE SAY EXACTLY WHAT WE THINK

Basic Instincts: Terrible Twos/Gut Bug Link. **Brain Health:** Fat & Sugar Gut Bug/Brain Link; Fish Oil/Cognitive Flexibility. **Recipe:** Lebanese Tabbouleh. **Q&A:** Maltitol Glycemic Reaction; Flaxseed – Golden vs Brown; Low Fat Sesame Seed Flour. **News Flashes:** Doc – Eat as much fat as you like (really?); Grandparent support helps reduce child obesity; Sunscreen in our DNA; Hospital Danger – Sepsis; Official – Drink to your Thirst; Fish Oil Shortfall/Criminality Link.

Basic Instincts

Terrible Twos/Gut Bug Link

Researchers found that both boys and girls with the most DIVERSE types of gut bacteria more frequently exhibited positive mood, curiosity, sociability and impulsivity [1].

In boys extroverted personality traits were also associated with the abundances of microbes from the *Rikenellaceae* and *Ruminococcaceae* families.

The researchers think that stress levels have something to do with the variety of bacteria but they don't know which comes first: whether the gut bugs influence the brain or the brain influences the gut bugs (through stress).

Crucially, the researchers did not study diet so we don't know if temperament can be modified that way.

My View? Forager children are well adjusted. See '*Childhood*' Deadly Harvest, Chapter 8, page 218 [2]. Presumably, amongst other things, their diet gave them the ideal profile of gut bacteria. We can do the same for our toddlers!

See also: '*Fish oil Shortfall-Criminality Link*', p 4.

Brain Health

Fat & Sugar Gut Bug/Brain Link

Both a high-fat and a high-sugar diet, compared to a normal diet, cause changes in gut bacteria that seem linked to a significant loss of "cognitive flexibility" or the power to adapt and adjust to changing situations [3].

Say the researchers: "Our gut bacteria communicate with the human brain. They release compounds that act as neurotransmitters, stimulate sensory nerves or the immune system, and affect a wide range of biological functions."

"Fat and sugar are altering your healthy bacterial systems and that is another reason why they are not good for you".

My View? Just so. Compare with Dr Mozaffarian who says, '*Eat as much fat as you like [Really?]*', (page 2).

See: '*Hospital Danger: Sepsis*', page 3, for how we undermine our health by messing with our '*microbiome*' (the microbes living in and on our bodies.)

Did You Know?

Some 90% of the body's SEROTONIN (a neuro-transmitter normally thought of as the brain's mood speciality) is produced in the GUT under the influence of gut microbes [4].

Brain Health

Fish Oil/Cognitive Flexibility

A study of older adults at risk of late-onset Alzheimer's disease found that those who consumed more fish oils did better than their peers on tests of cognitive flexibility – the ability to switch efficiently between tasks – and they had a bigger brain region called '*anterior cingulate cortex*' known to contribute to cognitive flexibility [5].

A lot of work in cognitive aging focuses on memory, but in fact cognitive flexibility and other executive functions have been shown to better predict daily functioning than memory does.

"Executive function" describes processes like planning, reasoning, paying attention, problem solving, impulse control and task switching. These functions tend to decline earlier than other cognitive functions in aging.

Parkinson's may begin in gut

New research indicates that Parkinson's disease may begin in the gastrointestinal tract and spread through the vagus nerve to the brain [6].

Say the researchers: "Patients with Parkinson's disease are often constipated many years before they receive the diagnosis".

My View? There are other lifestyle errors also related to Parkinson's. See '*Parkinson's Disease*', Deadly Harvest, Chapter 9, p 258 [7].

Recipes

Lebanese Tabbouleh

Yield: 2 servings

Enlarge photo: http://bit.ly/1Mv70i7

This is a highly nutritious and tasty dish, rich in herbs like mint and parsley all packed with wondrous micronutrients. Here shown garnished with Nicole's Three Nut Flour Bread: www.paleo-harvest.com

3 tablespoons olive oil
3 tablespoons fresh lemon juice
¼ teaspoon salt
black pepper to taste
2 cups (well packed) fresh, flat-leaf parsley (discard stalks), leaves washed and dried
½ cup (well packed) fresh mint leaves, washed and dried
2 small Roma tomatoes, about 3 oz
1 small (3 oz) seedless cucumber
1 small white onion, about 3 oz (or 2 green [spring] onions)
3 tablespoons chia seeds

1. Whisk olive oil, lemon juice, salt and pepper together in a bowl.
2. Finely chop (or use a food processor for ease) the parsley and mint and add to the bowl.
3. Finely chop tomatoes, cucumber and onion, or use a food processor for ease – chopping each vegetable separately. Add to the bowl.
4. Mix in the chia seeds and let stand, prior to serving, for about 15 minutes in the fridge. The chia seeds will soak up the liquid and become soft.
5. Should be eaten the same day or store in fridge for 24 hours max.

Questions

Maltitol Glycemic Reaction

Q. *Does maltitol make blood sugar spikes?*

A. No. Maltitol is a polyol similar to xylitol and sorbitol. As such it is much more slowly absorbed than sugar. According to a review article by Geoffrey Livesey, PhD, it has a glycemic index of 35 and an insulin index of 27 [8]. Both these are in the borderline low category.

See also: '*Sugar and Sugar Alternatives*', Dec 2014 [9].

By the way, Dr Livesey is an independent nutritionist who has made creative and original scientific contributions to the Food & Agriculture Organization's advice [10] that, '*Not all Calories are the same*', May 2013 [11].

Flaxseed: Golden vs Brown

Q. *Is there any difference between golden flaxseed (left) and brown flaxseed?*

A. Not, seemingly, any difference that matters. They are, by all measures, identical with each other and contain similar amounts of the beneficial oil omega-3 (in the form of ALA), plus dietary fiber and so forth. Some people say they can detect a difference in taste.

Since they do have different colors, there must be some micronutrient difference but we do not know what it is and whether it has any significance.

Beware yellow Solin (Linola)

'Linola' is a type of yellow flaxseed specially bred, wait for it, with its omega-3 STRIPPED OUT!

Why would anyone want to do this? After all, omega-3 oil is flaxseed's chief attraction!

It's the old story: omega-3 oils are fragile and go rancid easily. This didn't suit Agri-business which needs long STORAGE LIFE for when flaxseed is used as a bulk feed for livestock.

This is the ultimate obscenity. Last month we saw livestock being GENETICALLY MODIFIED so as to make more omega-3 in their meat! '*Cows Genetically Modified to Yield Fish Oils'*, June 2015 [12]. On the contrary, all that needs to be done is feed NORMAL livestock on omega-3 rich forage. See: '*Feeding Cows Right*', Aug 2014 [13].

Low Fat Sesame Seed Flour

Q. *What do you make of low fat sesame flour?*

A. We have never used it but it will be interesting to test it in our baking. If anyone has tried it, let us know how you got on!

This is a fat profile comparison:

Fat content	Low	Regular
Calories/100g	333	526
Total Fat, g	1.8	37.1
Omega-3, mg	11	281
Omega-6, mg	618	15,965

Regular sesame seed has a high omega-6 content, which would normally be regarded as a bad thing. However, it contains an antidote, 'sesamin', which blocks the bad effects of omega-6 oils [14]. See: '*Sesame Omega-6 Antidote'*, August 2005 [15]

News Flashes

Doc: Eat as much fat as you like [really?]

The *Dietary Guidelines for Americans* are revised every five years. The current one was published in 2010. See my critique: '*USDA Dietary Guidelines 2010*', Feb 2011 [16]. Amongst other things, they advise that Americans keep fat intake to less than 35% of total calories.

Forager diets were well within the 35% limit so, for me, this was one of their least controversial pronouncements.

However, Dr Dariush Mozaffarian, dean of the Friedman School, USA, thinks that, in the Guidelines next revision (due end 2015) this limit should be removed [17].

Writing in the doctors' trade journal, *JAMA*, Mozaffarian opines: "Modern evidence clearly shows that eating more foods rich in healthful fats like nuts, vegetable oils, and fish have protective effects, particularly for

cardiovascular disease… It's the food that matters, not its fat content." [So far, so good].

Mozaffarian continues: "…refined carbohydrates increase metabolic dysfunction and obesity… Lifting the restriction on total fat would clear the way for restaurants and industry to reformulate products containing more healthful fats and fewer refined grains and added sugars." [Really?]

Mozaffarian cites some perverse consequences of current policies. For example The National School Lunch program bans full-fat milk while keeping low-fat but sugar-sweetened milk on the menu.

My View? Mozaffarian starts off well enough – indeed it is vital to consume 'good' fats. However, I part company with him when he wants a free-for-all consumption of ANY kind of fat in ANY amount!

My flesh creeps at the thought of restaurants and industry "reformulating products" to suit their purposes.

We know exactly what happens when the food industry has free rein in such matters: abominations like hydrogenated fats and trans-fats, flax-oil stripped of its omega-3 (see 'Solin' page 2), and omega-6 oils in everything.

We have met Dr Mozaffarian before in '*Doc Rethinks Food-Disease Link*', Aug 2010 [18]. At that time he had some sensible things to say about how we should get our nutrition not from supplements but by eating REAL FOOD.

Grandparental support helps reduce child obesity

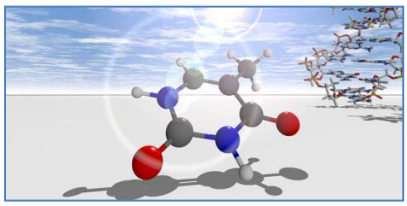
The homily, "It takes a village to raise a child" encapsulates the way all members of the forager band take responsibility for the children in the band – a process called 'alloparenting' See: '*Childhood: Forager Indulgent or Modern Discipline?*', Sept 2011 [19]

A Swedish study finds that emotional support from grandparents has a protective effect against child obesity [20].

What is going on? The researchers think that grandparent support relieves mothers of some of the stress of managing children and household such that they get to eat better. For example, home-cooked meals instead of take-away pizzas and other junk food.

As usual the researchers draw the wrong conclusions. Like last month's 'Worthy Idiots', instead of encouraging greater grandparent involvement, they want the GOVERNMENT to provide 'greater social support'. See: '*Stopping Grandmothers Retiring Early*', June 2015 [21].

Sunscreen in our DNA



DNA 'bases' are the building blocks of the DNA helix. One of them is a molecule called 'thymine' (image).

In '*How Skin Resists UV Damage*', April 2011 [22], I wrote:

> "In a remarkable piece of research, using the new science of 'quantum chemistry', scientists have discovered that DNA components [like thymine] defuse the sun's UV rays [A & B] and render them harmless [23]."

Now researchers, using the most sophisticated techniques, have discovered more of what is going on [24]. In effect, as the UV particle hits the 'base', electrons bounce in and out of their orbits and dissipate the UV energy as heat. That way they prevent the UV particles breaking the chemical bonds that hold the DNA together.

All this takes place at lightning speed measured in femto-seconds. A femto-second is $^{1}/_{1,000,000,000,000,000}$ of a second.

Belt & Braces

Moreover, it is reassuring to know that this is only the first line of defense. If any damage to the DNA should, perchance, occur, repair enzymes rush to the site and rapidly mend the break. See: '*Skin's Self Repair Mechanism*': Oct 2010 [25].

A third form of protection is, of course, the immune system which has many lines of defense – notably against cancers.

What of Sunscreens?

Talk about unintended consequences! As I say in '*Sunscreens Cause Skin Cancer*', March 2010 [26]:

> The more you use sunscreens, the more likely you are to get a cancer.

That's because, amongst many mischiefs, sunscreens foul up these delicately balanced DNA repair mechanisms.

Hospital Danger: Sepsis

It's a cheap jibe to suggest that hospitals are places to go to get sick. But in seems to be true in the matter of sepsis.

Researchers find that older adults are three times more likely to develop sepsis – a body-wide catastrophic response to infection – in the first three months AFTER leaving a hospital than at any other time [27].

Every year sepsis affects some 750,000 U.S. hospitalized patients [28], and costs more than $24 billion annually.

> More people die from hospital induced sepsis than die from prostate cancer, breast cancer and AIDS combined.

According to the researchers the culprit is the profligate use of antibiotics in hospital. Not, as one might suspect, because they promote resistant bugs, but because the antibiotics have created death and destruction in the microbiome – the 'good' microbes living in and on our bodies. See: '*Fat & Sugar Gut Bug/Brain Link*' Page 1.

My View: The Law of Unintended Consequences at work! The light is dawning that our microbiomes are designed to work IN SYMBIOSIS with our bodies to keep them healthy. We meddle with this delicate balance at our peril.

Official: Drink to your Thirst

Every so often I disparage the scares about 'dehydration' when the real danger is OVER-hydration (or '*water intoxication*'). See: '*The Truth about Sports Drinks*', April 2014 [29].

Now a 'consensus statement' in the Clinical Journal of Sports Medicine backs the message [30].

It was triggered by the deaths of two high school football players. Their excessive water intake had leached sodium from their blood resulting in 'Exercise Associated Hyponatremia' (EAH).

Say the authors: "Our major goal is to re-educate the public on the hazards of drinking beyond thirst during exercise."

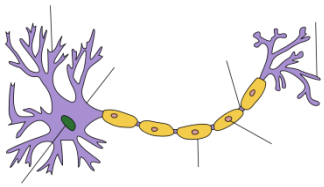
Very wisely they conclude: "Every single EAH death is tragic and preventable if we just listen to our bodies…"

Fish oil Shortfall/Criminality Link

The field known as "neuro-criminology," studies the interplay between biology and environment when it comes to antisocial and criminal behavior.

Research now suggests that omega-3 fish oil may have long-term neurodevelopmental effects that reduce antisocial and aggressive behavior problems in children [31].

In the study, carried out on the island of Mauritius, those who had poor fish intake at age 3 were more antisocial and aggressive at 8, 11 and 17 than the children receiving an extra two and a half portions of fish a week.



In the brain, omega-3 regulates neurotransmitters, enhances the life of a neuron and increases branching of '*dendrites*' (shown mauve). Dendrites are tendrils of a neuron that transmit the signals received via their synapses.

Research on the neuro-anatomy of violent criminals has shown that they have higher rates of damage and dysfunction in a region of the brain called the '*dorsolateral prefrontal cortex*'. Supplement-ation with omega-3 helps restore normal function.

In this study, children who had good omega-3 status at age 3 showed a 34% reduction in criminal behavior by the age of 23 compared to those who had had poor status. See: '*Terrible Twos/Gut-bug Link*', page 1.

My View? How, in our ignorance we drive our societies into psychotic behaviors!

1. Lisa M. Christian et al. Gut microbiome composition is associated with temperament during early childhood. Brain, Behavior, and Immunity, 2015; 45: 118 DOI: 10.1016/j.bbi.2014.10.018

2. http://bit.ly/ch-8

3. K.R. Magnusson et al. Relationships between diet-related changes in the gut microbiome and cognitive flexibility. Neuroscience, 2015; 300: 128 DOI: 10.1016/j.neuroscience.2015.05.016

4. Jessica M. Yano et al. Indigenous Bacteria from the Gut Microbiota Regulate Host Serotonin Biosynthesis. Cell, 2015; 161 (2): 264 DOI: 10.1016/j.cell.2015.02.047

5. Aron Barbey et al. Anterior cingulate cortex mediates the relationship between O3PUFAs and executive functions in APOE e4 carriers. Frontiers in Aging Neuroscience, May 2015 DOI: 10.3389/fnagi.2015.00087

6.Elisabeth Svensson et al. Vagotomy and subsequent risk of Parkinson's disease. Annals of Neurology, 2015; DOI: 10.1002/ana.24448

7. http://bit.ly/DH-Ch9

8. Livesey G, Health potential of polyols as sugar replacers, with emphasis on low glycaemic properties. Nutr Res Reviews, 2003, 16, 163-191.

9. http://bit.ly/1KsIcXM

10. http://bit.ly/1GUwMUN

11. http://bit.ly/1G5Gfxj

12. http://bit.ly/1gvLzjZ

13. http://bit.ly/1yGHQoQ

14. Chavali S R, Dietary alpha-linolenic acid increases TNF-alpha, and decreases IL-6, IL-10 in response to LPS: effects of sesamin on the delta-5 desaturation of omega6 and omega3 fatty acids in mice; Prostaglandins Leukot Essent Fatty Acids. 1998 Mar;58(3):185-91.

15. http://bit.ly/1KiiJxO

16. http://bit.ly/1Fore7G

17. D Mozaffarian, MD et al. The 2015 US Dietary Guidelines-Lifting the Ban on Total Dietary Fat. JAMA, June 2015 DOI: 10.1001/jama.2015.5941

18. http://bit.ly/1sL91IP

19. http://bit.ly/1sX4jH2

20. L. Lindberg. Low grandparental social support combined with low parental socioeconomic status is closely associated with obesity in preschool-aged children. Pediatric Obesity, 2015; DOI: 10.1111/ijpo.12049

21. http://bit.ly/1gvLzjZ

22. http://bit.ly/1iPXFP9

23. Relaxation mechanisms of UV-photoexcited DNA and RNA nucleobases. Barbatti M et al; Proc Natl Acad Sci U S A. 2010 Dec 14;107(50):21453-8,

24. B. K. McFarland, et al. Ultrafast X-ray Auger probing of photoexcited molecular dynamics. Nature Communications, 2014; 5 DOI: 10.1038/ncomms5235

25. http://bit.ly/1KtZtQg

26. http://bit.ly/1yGIeDZ

27. Hallie C Prescott, et al. Hospitalization Type Predicts Risk of Subsequent Severe Sepsis. American Journal of Respiratory and Critical Care Medicine, 2015; 150527130409004 DOI: 10.1164/rccm.201503-0483OC

28. Data from Centers for Disease Control and Prevention.

29. http://bit.ly/1ripgi6

30. Tamara Hew-Butler, et al. Statement of the Third International Exercise-Associated Hyponatremia Consensus Development Conference, Carlsbad, California, 2015. Clinical Journal of Sport Medicine, 2015; 25 (4): 303 DOI: 10.1097/JSM.0000000000000221

31. Adrian Raine et al. Reduction in behavior problems with omega-3 supplementation in children aged 8-16 years. Journal of Child Psychology and Psychiatry, 2015; 56 (5): 509 DOI: 10.1111/jcpp.12314