

BRaIn



Brain Research and Instruction

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I hope everyone is enjoying the summer and getting some important R & R. This summer version of the newsletter will be devoted to some things you may want to explore before returning to school. The fall edition, coming out shortly, will contain more of a focus on students.

COLLEGE READING TEACHERS - Are you interested?

I am currently collaborating on a reading textbook. If you would be interested in reviewing or test-driving this textbook, please go to www.brainresearch.us and use the contact link to email me ..or email me directly if you have my email address.

Resources

I found an interesting article "Teaching Methods and Correlation to Learning in the Language Classroom" at <http://ivc.uidaho.edu/flbrain/learning.htm>.

Want to learn about the latest in neuroscience? Listen at www.nature.com/neurosci/neuropod. This is sponsored by the most prestigious scientific journal in the world, *Nature*, so it has high credibility. Find out what is going on in top neuroscience labs.

Want to improve your brain this summer?

We know that oxygen is critical to the brain and that improved blood flow means more oxygen to the brain. Well, heaven forbid I suggest that you go to the gym this summer when you want to take it easy by the pool. All is not lost! You can sit by the pool and still get more oxygen to the brain! How? Laughter! In a study by Miller at the University of Maryland School of Medicine, it was found that while stress decreased blood flow by about 35%, laughter increased it by 22% - an improvement equivalent to that produced by a 15-30 minute workout! Our prayers have been answered! No, not really. We know

that exercise is important for neurogenesis (growth of new neurons) and for cardiovascular and mental health. But laughter is another tool for our arsenal. It may also boost the immune system and reduce inflammation, which is linked to many health problems. Has anyone tried Laughter Yoga? It is fun and easy because all you do is laugh and get a great workout. You can google laughter yoga and find one near you if you are lucky. So bring on the comedy videos and the jokes - all in the name of good brain health!

Want to improve your child's brain this summer?

A study by Kuo at University of Illinois at Urbana-Champaign stated that children with attention-deficit hyperactivity disorder who spent time in green, natural settings reported fewer symptoms than those who did indoor activities or outdoor activities in more urban areas. I can certainly see the benefits of moving around and playing outside versus sedentary activities inside, but by comparing outdoor activities in green settings versus urban, they examine more closely the impact of nature. However, the question arises whether one can be more active in open, park areas than in an urban area. The effects did not carry over when the intervention was not operating. There are many issues with this study, and as I have said before, one study does not make a case. But let us use it to remind us to get the kids outdoors for many aspects of their physical and mental health. Especially let's get them away from the tv and into interactive, creative, imaginative activities.

For Your Students

Do you want to teach students about the brain? Written for children 11 years old and up, *Inside Your Brain* (Chelsea House Publishers, 2007) describes how parts of the brain work, how emotions are experienced, and more. It even includes games, experiments and illustrations.

Food for Thought



FOOD FOR THOUGHT

This issue's brain and the diet information is more personal than usual, as it is something I discovered the hard way. We know that vitamin B12 is very important to the brain, as it impacts the nervous system, affecting cognition. Most people get enough B12 from their diet, so it is not usually a problem. However, there are instances in which some people cannot *absorb* the B12 from the diet, as they have lost the intrinsic factor. Two reasons for this are aging

and stomach problems. Because I mentioned to a new doctor that I was having stomach problems, she tested for B12 deficiency and I was dangerously low. While fatigue, which I also reported, is the most common symptom, trouble thinking is another major symptom. These are often attributed to overwork or stress, but can be symptoms of many things, including B12 deficiency. Since B12 is so very important to the brain, I wanted to bring this to your attention. Here is some information from Wikipedia. All cautions about Wikipedia aside, it seems to provide comprehensive information. Here is the excerpt:

Early and even fairly pronounced deficiency does not always cause distinct or specific symptoms. Common early symptoms are tiredness or a decreased mental work capacity, decreased concentration and decreased memory, irritability and depression.

Sleep disturbances may occur, because B12 may be involved in the regulation of the sleep wake cycle by the [pineal gland](#) (through [melatonin](#)).^[1]

Neurological signs of B₁₂ deficiency, which can occur without anemia, include sensory disturbances due to damage to peripheral nerves caused by [demyelination](#) and irreversible nerve cell death. Symptoms include [numbness](#) and/or tingling of the extremities, impaired sense of smell, loss of appetite, disturbed coordination and, if not treated in time, an [ataxic gait](#) specially in the dark when there is less visual reference,^[2] a syndrome known as [subacute combined degeneration of spinal cord](#).

B-12 deficiency can also cause symptoms of mania, psychosis, fatigue, memory impairment, irritability, depression and personality changes.^{[3][4][5][6]}

Recent studies have devalued a possible connection between B12 deficiency and Alzheimer's dementia, and such a correlation is unlikely as of June 2007.^[7]

Studies showing a relationship between [clinical depression](#) levels and deficient B₁₂ blood levels in elderly people are documented in the clinical literature.^[8] and [2002](#)^[9]

[Bipolar disorder](#) appears to genetically co-segregate with the hereditary B12-deficiency disorder [pernicious anemia](#)^{[10][11]}.

[Science Daily](#) reported that "a deficiency of B-vitamins may cause [vascular cognitive impairment](#), according to a new study by the [Jean Mayer USDA](#) Human Nutrition Research Center on Aging (HNRCA) at [Tufts University](#)." Aron Troen, PhD, said that: "The vascular changes occurred in the absence of neurotoxic or degenerative changes. Metabolic impairments induced by a diet deficient in three B-vitamins -folate, B12 and B6- caused cognitive dysfunction and reductions in brain capillary length and density in our mouse model."^{[12][13][14][15]}

The following symptoms have been recorded, beginning with those perhaps most likely to be indicative of B12 deficiency.

1. Itchy or tingling tongue. The tongue suddenly itches from time to time without warning. This occurs on the edge of the tongue, along one side or the other or at the tip. Some individuals experience stinging, pain, or tingling instead of itching.
2. White spots in the skin, resulting from melanin becoming absent in the area. These often occur on the outside of the forearm, but may occur in other places. The longer these spots are there, the whiter they get. As time goes by, the spots become very dry and flaky to the extent that small raw spots of skin may be exposed.

3. Sharp stabbing, tingling pain in the palm of one or both hands. This occurs suddenly and for no apparent reason in a spot directly below the ring finger, approximately where the first palm crease is. If B12 deficiency is not treated, a tingling pain may begin to occur along the outside edge of the hand, starting from the wrist. This pain occurs when the wrist is extended.

4. Sores at the corners of the mouth, sometimes extending along the edge of the lip. These are raw spots, not blisters, and they tend to come and go.

5. Nerve shock in the side of the body. It can be felt coming on a few seconds before it hits, and then it hits almost like a mild but deep electric shock and quickly subsides. It can occur at the side of either hip or on either side of the upper body, along the ribs. It can occur consecutively in at least two or three locations, one right after the other.

6. Shortness of breath, but without chest pain. This can occur when walking just a few yards.

7. Eye twitch, usually in one eye or the other. It can occur on the eyelid or just below the eye.

8. Facial pain, usually on only one side of the face at a time. This pain varies so much that it would be difficult to describe all the possibilities. This can present as a dull pain in the cheek bone right underneath an eye, or a sharp shooting pain across the forehead, sometimes coming downward from the scalp to the edge of the nose by the eye.

9. Tingling along the back of one or both thighs, starting at the hips and shooting downward.

10. Memory loss and/or disorientation.

11. Migraine headaches. These may be preceded by a temporary blind spot in the center of the field of vision, usually lasting about ten minutes, and sometimes followed by facial pain under the eyes. After the blind spot vanishes, there may be zigzag streaks through the vision that may last up to hours. Even in the same person, there may be extreme variations in the headaches themselves. They may be quite severe with nausea or they may be virtually nonexistent.

Migraines of most individuals have causes other than B12 deficiency, but migraines of certain individuals diminish or stop completely after they are treated for B12 deficiency.

12. Irritability and/or depression and/or personality changes.

[edit] Causes

- Inadequate dietary intake of vitamin B₁₂. As the vitamin B₁₂ occurs naturally only in animal products (eggs, meat, milk), and a particular strain of [nutritional yeast](#); a [vegan](#) diet can produce a deficiency unless one uses supplements or eats enriched food.^{[16][17]}
- Selective impaired absorption of vitamin B₁₂ due to [intrinsic factor](#) deficiency. This may depend on loss of [gastric parietal cells](#) in chronic [atrophic gastritis](#) (in which case, the resulting [megaloblastic anaemia](#) takes the name of "[pernicious anaemia](#)"), or on wide surgical resection of stomach (such as in [bariatric surgery](#)), or on rare hereditary causes of impaired synthesis of intrinsic factor.
- Impaired absorption of vitamin B₁₂ in the setting of a more generalised [malabsorption](#) or maldigestion syndrome. This includes any form of structural damage or wide surgical resection of the terminal [ileum](#) (the principal site of vitamin B₁₂ absorption), forms of [achlorhydria](#) (including that artificially induced

by drugs such as [proton pump inhibitors](#)), as well as [bacterial overgrowth](#) (such as in [blind loop syndrome](#)).

- Chronic intestinal infestation by the [fish tapeworm *Diphyllobothrium*](#), that competes for vitamin B₁₂, seizing it for its own use and therefore leaving insufficient amount for the host organism. This is mostly confined to [Scandinavia](#) and parts of [Eastern Europe](#) (for example, in preparers of [gefilte fish](#), who would acquire the tapeworm by sneaking bits of fish before it was cooked while making the Eastern European delicacy).
- The [diabetes](#) medication, [metformin](#) may interfere with B12 dietary absorption.^[18]
- Hereditary causes such as severe [MTHFR](#) deficiency, [homocystinuria](#), and [transcobalamin](#) deficiency.
- Some studies have shown that [giardiasis](#), or similar [parasite](#) should be considered as a cause of Vitamin B12 deficiency, this a result of the problems caused within the intestinal absorption system

Me again: I have devoted a lot of space to this because IF you have it, it is so dangerous for your brain. I am not a medical doctor, but just informing you of a brain-diet related issue. *As you have heard me say many times, check with your medical doctor regarding your dietary changes and habits.*

Dr. Z's Book Club

I am going to mention more than one book in this section, as perhaps you still have a little vacation time left and want something absorbing to read. Here are some books that I have been reading:

We have all heard enough foolishness about right brain/left brain in the media and, sadly, in presentations. If you want to get some scientific explanation of the hemispheres, you would enjoy *The Right Mind: Making Sense of the Hemispheres* by Robert Ornstein. While it is scientific, and much of the information is complex, it is quite understandable and enjoyable for educators, who may be more informed about brain research than the average lay person.

As educators, we are in the business of changing minds. All of you Howard Gardner fans, of which I am one, will enjoy a recent book of his entitled *Changing Minds: The Art and Science of Changing Our Own and Other People's Minds*. Drawing on cognitive research, he offers insights and examines seven factors involved in changing minds. As educators, you will especially enjoy his section showing how people can use these factors to change perspective and behavior.

I read 20 or so books at a time, dipping into whatever strikes me each morning, and always seeming to find just what I want at the right time. Here are just a few books from my reading nook. I haven't completed all of these, but I can recommend them (and any books by these authors):

How the Mind Works by Stephen Pinker

Coming to Our Senses by Jon Kabat Zinn (mindfulness meditation)

Musicophilia by Oliver Sacks

Brain, Behavior and Learning in Language and Reading Disorders edited by Moody and Silliman (not light reading 😊)

Of course there are lots of scientific articles to read on the web page now at www.brainresearch.us using the link to resources at the top of the home page.

And a book I wrote.....

Six Weeks to a Brain Compatible Classroom by Janet N. Zadina, Ph.D.

The workbook came out January, 2008. You can order one by looking for the workbook order link on my website at www.brainresearch.us. At \$10 or under (depending upon quantity) it is an affordable option for professional development and an easy way to energize and enhance your teaching!

If you have used the workbook, I would certainly appreciate your feedback, as there will eventually be a revision. You can contact me at www.brainresearch.us using the contact link.

Professional Development Opportunities - New Presentation

New this year is the *Multiple Pathways Model™ for Enhancing and Energizing Instruction*. This material can be in the form of a keynote or workshop. The purpose of the model is to take what we know about the brain and learning and put it into an implementable format. It is a way of organizing the myriad, extensive, and complex research into categories. Of course, like the brain, the categories are integrated and overlapping, but it organizes and makes manageable and implementable this complex information. As usual, it is an entertaining, visual, participatory, and engaging workshop.

Teachers are well aware of visual, auditory, and kinesthetic pathways. This model presents additional multiple pathways that are just as important to learning. This presentation is a great way to energize your faculty at any point in the year, giving them lots of new ideas and strategies.

If you want more information, contact me using the Contact link at www.brainresearch.us.

WEB PAGE: www.brainresearch.us

Finally! The web page has been updated. We have a new server to make it easier for you to sign up for newsletters. Our goal is to get lots of research articles and links on the web page during this school year. It is still a work in progress, but you can find some new information on it. Be sure to check out the research section and previous newsletters to get more information.

SPEAKING SCHEDULE

Currently scheduling for 2010.

.If you are interested in scheduling a presentation for your group, please contact www.brainresearch.us as soon as possible

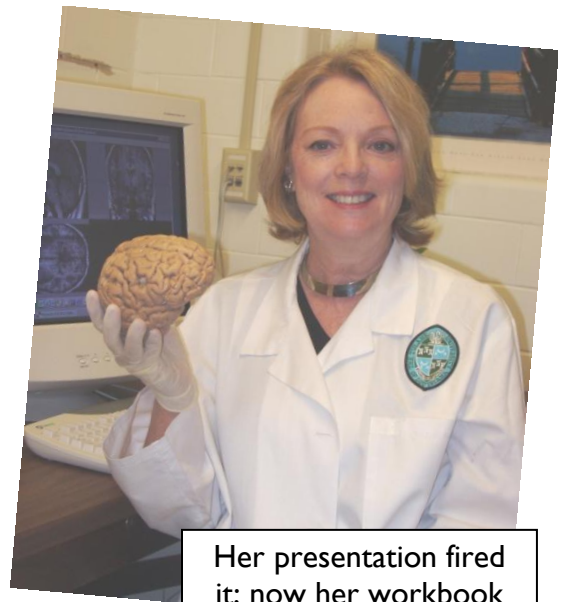
WANTING MORE?

Six Weeks to a Brain-Compatible Classroom: Using Brain Research to Enhance & Energize Instruction

A Workbook for Educators

by JANET N. ZADINA, PH.D.

- Reinforcement of BR&IN key concepts
- Quick reference guide to relevant facts about the brain
- Detailed and illuminating illustrations
- Dozens of ideas for using BR&IN strategies in the classroom
- Glossary of key terms
- Recommended web links
- Bibliography of titles on Dr. Zadina's bookshelf
- Handy forms and masters for executing the strategies
- Optional hand-in assignments for continuing education credits



Her presentation fired it; now her workbook helps you wire it!

YOU CAN ORDER THE WORKBOOK ON THE WEB: www.brainresearch.us. You will see the link on the home page. You can also order through Amazon, but it is faster through our web page.

Until Next Time.....

I would love to hear from you! Please drop me an email and share your successes! You can reach me through the contact page at www.brainresearch.us

Until next time, I wish you a great semester!

Janet Zadina, Ph.D.

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