Note: You are receiving this email because you requested additional information after attending one of my conference presentations or workshops. If you do not wish to receive further information, please respond to this email with "cancel" in the subject line.

Brain Research and Instruction

Janet N. Zadina, Ph.D.

Greetings!

Welcome back! I hope your school year is getting off to a good start!

You haven't received a newsletter in a while because I was quite overworked finishing my research and my dissertation*, "Neuroanatomy of Dyslexia: A Behavioral-Anatomic Study of Dyslexia Subtypes and Controls*." I am pleased to say I finished in May and the results were interesting. See below. I hope to keep the newsletter coming on a more regular basis now.

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FOCUS ON: DYSLEXIA

My dissertation research was on college students recruited from developmental reading classes and from college credit courses to insure a wide range of reading abilities. Three reading measures, cognitive tests, language tests, and MRI brain scan were administered and subtypes of dyslexia were found. Subtypes of dyslexics were significantly different from each other, both in behavioral and anatomical ways. In other words, my research supports the hypothesis that dyslexia is a heterogeneous disorder. This means that some students may be impaired in one reading process while others are impaired in a different reading process. Two broad educational implications are: 1) Perhaps specific interventions must be targeted differentially (primarily clinically) and 2) Classroom intervention should address multiple reading processes.

I realize that this information is perhaps more general than you would want, but a discussion of this is beyond the scope of this newsletter. However, the findings do support what I talk about in my Learning and the Brain presentations when I talk about pathways and addressing individual differences. When it is published, I will include the abstract in the newsletter and direct you to the journal. In the meantime, I will be presenting this information at some upcoming conferences and will keep you posted. The first presentation will be at Society for Neuroscience in November.

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This newsletter is written by me as a service to those who have attended my workshops and conference presentations or who have requested information. It is not affiliated with my university position.

HOT OFF THE PRESS!!!!

You may recall that I have stressed the importance of faces and thus, face to face contact between instructor and student. New evidence finds that even infants pick up visual clues from the movement of the lips and other parts of the face that can help with their comprehension of what is

being said. Pass this information along to your students who have children and keep in mind that when we are writing on the board, they cannot see our faces. ☺

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FOOD FOR THOUGHT

Is it hard to get our brains in gear after the summer break? Last winter I discussed the research on blueberries and the brain. I am including that again as it continues to be substantiated as a reminder, followed by some hints for including this in your diet.

Eat your blueberries! Dr. Black and associates at Rutgers found that rats who ate a blueberry-rich diet performed better in a maze than rats who did not. They believe that the blueberries led to an increase in new neurons. Casadesus at Tufts is also researching blueberries and researchers there believe that they can have a powerful effect on cognition. Shukitt-Hale, also at Tufts, found that blueberries improved learning, memory and coordination in older animals.

If you have noticed that the blueberries get moldy quickly, buy frozen ones and thaw out a couple of days' worth in a small bowl in the refrigerator. I either sprinkle them on cereal and/or put them in plain yogurt. Not only is it cheaper than buying the flavored yogurt, you are not really getting much blueberry in the commercial yogurts, but you ARE getting a lot of sugar!

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HOT OFF THE PRESS!!!!

Evidence for the importance of music continues to accumulate. Recent research in Hong Kong (Chan, *Neuropsychology*, July, 2003) indicates that children who have received musical training have better verbal memory than those children who have not received such training. You may recall that I have mentioned that some neuroimaging research shows that professional musicians tend to use the language center of the brain when listening to music while non-professionals tend to use right-hemisphere processes. As with all new research, we have to be careful in drawing implications, as many factors must be considered. However, I think that we can encourage our students to seek musical training for their children and we can justify our using music in our classrooms, not only for emotional engagement in the lesson, but also to stimulate the brain. Remember, however, if you are playing background music, it is important to use music with 60 beats a minute (instrumental only), such as Mozart or baroque music. Other types of music may be used for the other purposes we have talked about in workshops.

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COMPENSATION

Something I stress in my workshops and included in my dissertation research is the importance of compensation as a tool. If our students have weakened, inaccessible, or altered pathways, they may be able to utilize other brain processes and pathways, other skills, to perform a task. We have talked about the plasticity of the brain, meaning that experience (learning, practice) changes the brain itself. An exciting new study (Zohary, *Nature Neuroscience,* 2003) suggests that plasticity can be greater than we thought. The brain may be more amenable to change than previously believed. In a study of blind people's brains, it was found that the visual cortex (which in blind people could not be used for seeing) actually adapted itself to be used for processing verbal information rather than visual. This resulted in the blind actually performing better on verbal memory skills than those with sight. This study indicates that the blind take the visual cortex tissue not being used for vision and apply it to another task, i.e., verbal memory.

To me, two things are exciting about this. First, it has implications for all teaching and learning, but especially for our developmental students, in that if a student is unable to improve on a skill through typical pathways, the student may be able to compensate. Secondly, and very importantly, it reminds us that students who are not good at what we may be trying to teach them, such as reading or math, may be very *talented* in other skills. Brain tissue that isn't used for one purpose may be "usurped" for another. As I say, "**Look for the gift**" and use it to help them compensate, develop confidence, and experience success!

UPDATE

Since finishing my dissertation and earning my Ph.D., I have been hired as a Post-Doctoral Fellow in Cognitive Neuroscience/Neuropsychology in the Department of Psychiatry and Neurology at Tulane University School of Medicine. I will be working on several research projects, including stuttering, dyslexia, and emotion. I am pleased that I can bring an educational perspective to scientific work on language, emotion, and learning. However, as you know, for me **to live is to teach,** so I want to stay involved in education. Due to my conference schedule (now scientific *and* educational) I am generally unable to teach as an adjunct. Therefore, I will continue to do my educational workshops and work with all of you wonderful, dedicated educators in translating this exciting new scientific information. I really appreciate your feedback that not only is this information helpful to you as instructors, but that it is making a difference to students! I think as educators we are so blessed to have a role in life that can make a big difference in the lives of students!

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BOOK OF THE MONTH

Last year I recommended a book even before I read it because the author was one of the instructors at the Harvard University Mind, Brain and Education Institute that I attended and he was very impressive. The book is *The Art of Changing the Brain: Enriching the Practice of Teaching by Exploring the Biology of Learning* by James E. Zull (Stylus, 2002). I am actually reading his book for the *second* time. It is written by a scientist for educators and I heartily recommend it. I will be including some of this information in LEARNING AND THE BRAIN: PART II, so reading it beforehand will be helpful to you. I think this book could revolutionize our approach to teaching. Please email me your responses to this book so that we can share them in the newsletter.

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FROM THE FIELD

Linda Blatt from Iowa writes: *I was one of the attendees at the Heartland Conference last spring. I'm writing to thank you for helping me reformat my tutor training: This year I am including some of your marvelous insights/activities to engage my tutors in a compelling way as they take on their responsibilities this year. Again, your work has re-energized my training. I've been teaching college English for 25 years and being refreshed is quite a gift.*

Using this information to train tutors is a great idea! And I agree that new information keeps us energized. I look forward to hearing from the rest of you about how you are putting this information to use!

I would love to hear from those who have tried some of the ideas from a workshop or who may have devised their own activities based on the principles given in a workshop. Please let me know how they are working and share your ideas with others.

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UPCOMING WORKSHOPS AND PRESENTATIONS

Let me know if you are attending any of these so that we can meet!

September 24: pre-conference institute on Learning and the Brain at regional TESOL in New Orleans.

October 15: pre-conference institute at CRLA on Learning and the Brain, *PART II*. This is a new workshop on Learning and the Brain, so those of you who have attended one in the past may still find this useful. There will necessarily be some review, but most of it will be new material.

October 16: a three-hour workshop on Learning and the Brain for the faculty of **TVI** in Albuquerque.

November 6: a conference presentation on **Learning and the Brain** (one hour overview) at **MADE** (Mississippi Association of Developmental Educators).

November 9: poster presentation at Society for Neuroscience on Neuroanatomy of Dyslexia.

I will be attending that conference, along with about 25,000 other neuroscientists, and I will bring you the latest from there in my December newsletter.

My **spring schedule** is getting very full. If you want to schedule a lecture, keynote address, or workshop, please contact me as soon as possible.

HELLO AND THANKS!

A great big thanks to Charis Sawyer and Roz Bethke and their team at Heartland CRLA who worked so hard to make my job easier and to make the visit so rewarding! The Heartland members were so enthusiastic! They really gave me that hometown welcome (I'm from the Midwest)! I'm still talking about your great posters on the brain and learning, Charis!

I am so appreciative of Marcella Durr, Cheryl Flax-Hyman, Marsha Benton, and all the great folks at Gulf Coast Community College! I apparently brought New Orleans' weather, as in torrential downpours and street flooding. I really tried the patience of Marcella and colleagues in our phone calls as I got lost and tried to find my way there in the flooded streets. They have the patience of saints there! And when I arrived a little late and dripping wet, I couldn't have received a more gracious reception. Thanks for all your hard work in putting that together.

I feel so fortunate that I have the opportunity to meet such wonderful human beings as I do at these workshops!

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SIGN UP NOW!

If someone forwarded you this newsletter and you would like to be added to the mailing list, just reply with "sign me up" in the subject line.

RESEARCH PARTICIPATION OPPORTUNITIES

I am currently seeking volunteers for stuttering research. Participants must be ages 7-13, able to be tested in New Orleans, and willing to have a MRI brain scan. I am looking for children who either currently stutter or have recovered from early childhood stuttering.

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WORKSHOP TOPICS

I have several options available now for workshops for your faculty, ranging from a brief one-hour overview of principles and strategies based on brain research to all-day workshops. For those of you who have had me present my three-hour Learning and the Brain workshop, there is a second one, PART II, available now – the one that will be presented at CRLA as a pre-conference institute. So if your faculty needs a refresher, more information, or you want to bring the information to a wider audience, you may want this second workshop.

I would love to hear from you! Please drop me an email!

Until next time, I wish you a great semester!

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