

## **WISCONSIN COUNCIL ON CHILDREN AND FAMILIES**

*Raising Voices to Make Every Kid Count*

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### **NETWORKING NEURONS E-Newsletter Summer 2008**

Welcome to the latest issue of the WCCF Networking Neurons E-newsletter. This newsletter covers the areas of brain development from prenatal through adolescence, with the emphasis on the earliest years. Presented are ways to promote healthy development through areas such as social/emotional interactions, play, nutrition, and through information about the factors that influence development and possible resulting outcomes.

Feel free to forward these messages to any other interested parties, and encourage others to sign up for this and/or other WCCF mailing lists at <http://www.wccf.org/email>. If you would like to be removed from the recipient list, simply reply with the words “remove from list” in the message. If you have any questions, comments or suggestions feel free to e-mail me at [deborahschmid@wccf.org](mailto:deborahschmid@wccf.org)

This issue’s topic: **Adolescent Brain Development**

### ***The 4 Wonders of Adolescence***

Submitted by MaryAdele Revoy, MS

Adolescent Development Specialist

Chances are if you are reading this newsletter than you have navigated through the wonderful time period of human development we call “adolescence.” Believe it or not, this recognition of “adolescence” as being a distinct stage in human development is relatively new compared to the long continuum of research on the development of humans. Through the use of technology (ex. PET scans, functional MRIs, etc.), the top researchers around the country are discovering unique and significant changes in the brain occurring during the adolescent years (10-25 years old). While this research provides information on brain development, it also delves into questions that have bewildered parents, teachers, and adults who have crossed paths with the “mysterious adolescent.”

### ***What were they thinking?***

The greatest question to plague the youth of today may be: “*what were you thinking when you did X?*” And the most common answer to throw the parent, teacher or adult over the proverbial edge: “*I don’t know.*” This answer is not meant to add to the frustration of all involved, but could truly be the thought or lack of thought process going

on in the adolescent's brain. Results of research with adolescents and scans of their brains show that the front of the brains, the area known as the prefrontal cortex (PFC), is not fully developed. Thus the capability of the adolescent to think logically, make inferences, anticipate consequences, and control impulses is limited until the PFC comes into fruition.

Five areas of thinking are developed and strengthened as the adolescent brain matures.

- 1) Reasoning = ability to problem solve by identifying choices
- 2) Decision making = ability to imagine hypothetical situations and the use of choices
- 3) Processing = efficiency of the thought processes within the brain; i.e. shortening the time of the blank stare that the teen may portray when asked a question
- 4) Expertise = the ability to learn from experiences and recall past lessons to apply to present and future situations
- 5) Consciousness = part of social cognition, which includes impression formation, social perspective taking, social conventions and moral reasoning

When working with teens, it is important to remember that the environment and every one in it can affect cognitive development, i.e. how and what they think. A few items that you can do with adolescents in every day interactions are:

- a) Ask opened ended questions and wait for an answer – no matter how long the wait.
- b) Help the youth think about hypothetical situations by prompting him/her to answer “*what if X happened?*” and brainstorm answers together. Use this exchange as an example for the youth to come up with his/her own hypothetical question and possible answers.
- c) If a youth is questioning social rules or moral guidelines, use it as an opportunity to talk about the greater philosophical questions that we have all struggled with at some point in our lives. It is normal and part of the developmental process for the youth to question your authority (even if it doesn't feel good) and disagree with you as they explore these higher notions of social and moral development.

For more information on cognitive development in adolescents:

1. DANA Foundation

<http://www.dana.org>

2. National Institute of Mental Health

<http://www.nimh.nih.gov/health/publications/teenage-brain-a-work-in-progress.shtml>

### ***Why would they ever do that?***

It would be great if we could blame all the adolescents' whacky behaviors on the raging hormones that come with puberty. While puberty adds a nice spice to this time period, it cannot take all the blame. Puberty is separate from brain development. Changes during puberty correspond to internal and external physical changes that have a distinct beginning and end. The popular hormones testosterone and estrogen do their magic changing girls and boys into tall, curvy, muscular, youth with zits, breasts, and beards.

Hormones may affect behavior changes by creating appearance changes in the youth and (a) how they see themselves and/or (b) by creating how others react to their physical changes.

Adults may wonder why teens would ever think jumping off roofs or skateboarding down stairs would be a good idea. Behaviors that they, as mature and logical adults, think are stupid and careless. But I dare to ask the question: are kids riskier today than the adults who talk about their own adventures “back in the day”? Could it be that the culture of today and the resources available to youth have created this perception that youth are riskier? Or is it that the risks, behaviors, and consequences that the youth endure are noticed (and may be even publicized) because of the growth in technology and quick communication? The adolescent brain thrives in this fast-pace, quick-reward culture.

As noted above, the job of the prefrontal cortex (PFC) is to keep the risks and rewards in check, but the PFC is not fully developed in the changing bodies and brains of our adolescents. The brain’s “reward circuit” is actually the great motivator telling us what we want more of and what feels good. This circuit corresponds to changes in our limbic system; a system comprised of the amygdala and hippocampus that helps regulate emotions. When given the opportunity to jump off a roof a 13 year old may find it exciting, but I may hesitate at the thought of breaking my legs. This hesitation on my part and thought process of possible consequences can only be accomplished because I have a PFC that tells me jumping off a roof may not be a good idea. The 13 year old however, doesn’t have this thought filter (yet) so she gets caught up in the moment, may be influenced by peer pressure and/or may even have the experience of jumping off shorter platforms as successful experiences to draw from when deciding to jump or not jump. She takes the leap without thinking twice.

The trick is how to create healthy risks with healthy rewards that will ignite the same level of passion in the reward circuit of our beloved youth. A few tips to get you thinking about creating this environment are listed below.

1. Make a note of when youth are taking risks in other areas of their lives and discuss the similar feelings in those situations compared to other risky events. For example, there is some level of risk in giving a public presentation, participating in drama productions or musical concerts, or trying out for a sports team.
2. Create opportunities for youth to broaden their skills in their “risk” areas in order to adapt the behavior into mainstream activities. For example, if a teen loves to skate board, maybe find a way for the youth to teach younger children how to skate board safely. Same would go for jumping off roofs, maybe the teen could teach diving at the local swimming pool.
3. The Search Institute works with communities in order to develop partnerships and networks to support the successful development of adolescents and younger children. <http://www.search-institute.org/>

### *How come they don't care?*

I can actually hear myself saying it to my mother, “*I don't care,*” followed by a shift on

the hips and rolling of the eyes. Or another favorite of mine was “*who cares?*” as I flicked my hair, turned my head and walked out of the room. It was all about me and I couldn’t believe that she didn’t know that. To the dismay of many adults, adolescence is all about egocentrism and it needs to be. This is the time when the teen needs to discover who she/he is and figure out how she/he fits into the world. Up until now, everything was told to them about the workings of their environment. But with the development of more complex cognitive processes and increases in the number of life experiences, adolescents can now ask “*who am I?*”

In trying to answer this question, adolescents may experiment with a number of different things ranging from dying their hair, piercing their eyebrows, wearing layers of black clothes on a warm summer day to smoking cigarettes, drinking beer, and driving fast. Teens will probably deny it, but this search for an independent identity is affected by the relationships in their lives. As hard as they try to pull away from their families and the childhood they are growing out of, the pull to fit in and be a part of something is just as great. Relationships or human interactions, whether good or bad, are keys to motivation, especially in the area of change. Empathy, sympathy and general care increase when you can relate to the situation-when there is a RELATIONship.

One of the most popular ways organizations use to broaden a youth’s perspective and expand their level of human interactions is through volunteer work. Volunteerism is a great tool and a valued commodity in today’s world. In order to enhance the volunteer experience even more, and to support adolescent brain development, organizations should try adapting to a service-learning (SL) model. Not only does the youth still volunteer for a worthy cause, but they are asked to be active participants in the planning, facilitating and follow-up of the event. More importantly in the SL model there is time for reflection about how the work affected them as individuals and their world which can lead to a deeper exploration into social consciousness.

For more information on service learning, check out the resources at the National Service-Learning Clearinghouse: <http://www.servicelearning.org/> or the Search Institute’s publication *An asset builder’s guide to service-learning* (2000).

### ***When are they going to get up?***

This is not a figurative, clever little question. Parents all over America, dare I say the world, ask themselves when the kid is going to get out of bed. “*They could sleep all day if I let them.*” Melatonin is a hormone released by the brain that contributes to our sleepiness. The levels of melatonin change during a 24 hour period to let us know when it is time for us to slow down and get some sleep. The production of melatonin in teens (who have completed puberty) is two hours later. Therefore, teens can stay up late and not feel sleepy. But the paradox is that teens actually need more sleep. Due to the physical changes and emotional stresses, researchers suggest that adolescents get nine hours of sleep per night (adults should get 7-8 hours of sleep). If left to their own schedules, it may be common for a teen to adopt a sleep cycle of 1am to 10am. This, however, doesn’t usually work for the family nor for the school. You may have noticed that some schools are pushing start times back in the morning and working with their partners to coordinate services later. In order to cope with your sleepy teen:

1. Encourage them to get into a regular sleep cycle that fits into their schedule. They will have greater success in school if they get a good night's sleep rather than stay up all night for a cram session. Moreover, job performance and athletic ability are strengthened when the body gets enough rest.
2. Do not let your teen sleep in on the weekends. If they must, limit it to one hour past their normal wake up time. You cannot make up for loss sleep, but may in fact be throwing off your natural sleep cycle when you try to "catch up."
3. Talk to your teen about the need for sleep and the problems too little sleep can cause. For example: problems focusing attention can't think logically, difficulties remembering, feeling tired, and lacking the ability to regulate emotions.
4. A great handout is available from the National Institutes of Health, National Institute of Neurological Disorders and Stroke. (2007, May 21). *Brain basics: Understanding sleep* (NIH Publication No. 06-3440-c). Available at: [http://www.ninds.nih.gov/disorders/brain\\_basics](http://www.ninds.nih.gov/disorders/brain_basics)
5. For additional great, easy-to-read handouts on sleep and other topics, visit the website of the Society for Neuroscience. <http://www.sfn.org/>

A few other great resources for parents (or anyone working with teens) include:

- Feinstein, S. (2007). *Parenting the teenage brain – understanding a work in progress*. Lanham, MD: The Rowman & Littlefield Publishing Group, Inc.
- Sax, L. (2005). *Why Gender Matters*. NY: Doubleday.
- Steinberg, L. (2004). *The 10 basic principles of good parenting*. NY: Simon & Schuster Paperbacks.
- Strauch, B. (2003). *The Primal Teen. What the new discoveries about the teenage brain tell us about our kids*. NY: Anchor Books.
- Taswell, R. (Ed.). (2004). *Parenting at the speed of teens: positive tips on everyday issues*. Minneapolis, MN: Search Institute.

If this article excites your brain and you want to learn more, WCCF offers two-day trainings on adolescent brain development. The next training is in Eau Claire on August 21 & 22, 2008. Go to the WCCF link for more information.

[http://www.wccf.org/event\\_unlockingmysteries2008.php](http://www.wccf.org/event_unlockingmysteries2008.php)

If your agency or community network would like to host a training please contact MaryAdele Revoy at 608-284-0580 ext. 328 or [mrevoy@wccf.org](mailto:mrevoy@wccf.org). [Registration fees could be decreased depending on what resources you can provide.] Ms. Revoy is also available for workshops and public presentations.

***AND don't forget about the younger ages!***

WCCF continues to offer trainings and workshops on early brain development. Materials are also available through the website at [www.wccf.org](http://www.wccf.org) on The Brain Project pages.

Funding makes it possible for Deborah McNelis (formerly Deborah Schmid) to do two early brain development workshops each month in the Milwaukee area. Contact Deborah

at: [dmcnelis@wccf.org](mailto:dmcnelis@wccf.org) or call 414-315-2779. Fee based presentations can also be arranged in other areas of the state. Following are topics covered:

**The Basics of Brain Development It Doesn't Stop at 3**  
**Brain Development in the Preschool Years Relationships Matter**  
**Understanding the Critical importance of Attachment and Attunement**  
**Pink or Blue? Differences Between the Male and Female Brain**  
**Learning About Learning Reach and Teach Parents**  
**The Effects of Poverty on Brain Development**  
**The Brain and Stress, Trauma, Abuse and Neglect**