



# PALS NEWSLETTER

A newsletter of the Pittsburgh ADHD Longitudinal Study

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August 2008

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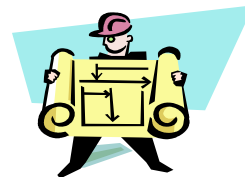
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## Ready to roll with the next phase of the PALS Study



As we reported last fall, and have discussed with many of you during your annual visits this past year, the PALS study has been refunded and will continue for another five years. The overall aims of the study will remain the same, but our interviewing procedures will change in a number of ways. These include:

• The frequency of Young Adult visits will change. We will continue annual interviews with all participants through age 23. After that, we will interview participants at ages 25, 27, 30 and 35.

• We will touch base with all young adult participants by phone each year. During those years when young adult participants are not scheduled for a visit, we will contact them by phone to update contact information.

• We will only interview one parent per young adult participant. Beginning with the Fall, 2008 visits, we will interview one parent rather than two per young adult. Decreases in study funding require that we scale back the number of visits that we conduct each year.

• Many parent visits will be shortened, and parents with shorter visits will have the option of participating by mail and phone. We will continue to conduct interviews of young adults who are 25 and younger in our offices. Interviews with parents of older young adults will be brief. Questionnaires will be mailed out to these parents to complete and return to us, and we may follow up with a brief phone call to finalize the assessment.

• All young adult and parent participants will be re-consented before their next scheduled interview. As this is the start of another phase of the study, we will review an informed consent document with you before your next study visit. This document outlines your participation in the study over the next five years. As noted above, involvement for most participants will be less as we move away from annual visits.

## How to know when your next study appointment will be?

Be on the lookout for a letter from us in the next two weeks that will include general information about the study continuation and specific information about your next study appointment.

We look forward to continued partnership with all of you in the upcoming years. Please feel free to contact us with any questions.

# Brain imaging and ADHD

No computer or brain scan test has yet been developed that can definitively diagnose ADHD. However, as new brain imaging techniques have emerged, researchers are taking advantage of these technologies to increase our understanding of the brain's structure and functioning in individuals with ADHD.

Over the last decade, new brain imaging techniques have allowed researchers to ask questions about how the brains of people with and without ADHD differ. Brain imaging has permitted researchers to examine the anatomical structure of the brain, as well as how different parts of the brain function in awake, alert individuals as they perform tasks like simple computer games. In particular, magnetic resonance imaging, or MRI, and functional magnetic resonance imaging, or fMRI, have led to important insights about the brain basis of ADHD. Critically, these techniques are safe, non-invasive and do not expose people to radiation, so they can be used even in small children.

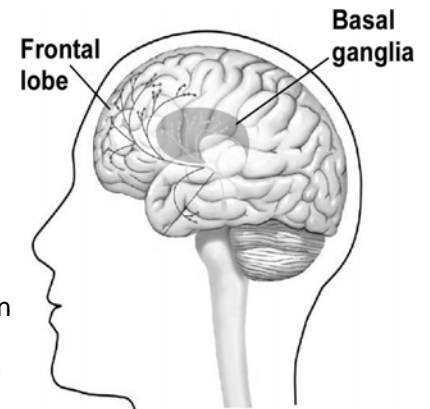
MRI allows researchers to look at the brain's detailed anatomy. Researchers using this technique have shown that the brains of children and young adolescents with ADHD are smaller, on average, than the brains of children and adolescents without ADHD. Parts of the frontal lobes and the basal ganglia (shown in the picture) seem to be especially affected. Interestingly, both of these parts of the brain are involved in controlling behavior, particularly behaviors that happen quickly without much thought. However, MRI studies in which children with ADHD have been followed over long periods of time also show that some parts of the brain catch up in size in mid to late adolescence. Some researchers suggest that this "normalization" in size might be associated with decreased hyperactivity, as is often seen in teens with ADHD.

Some researchers who use MRI also use complex computerized methods to measure the thickness of the cortex—the grey matter on the surface of the brain. For example, in a study that had a lot of media attention, researchers at the National Institutes of Mental Health looked at how the thickness of the cortex changed with age in 223 children with ADHD and in 223 children without ADHD. The researchers found that the way the cortex thickened was similar for children in both groups. What differed between the groups was that children with ADHD showed a delay of about three years before

their cortex reached its peak thickness. The study was widely described as showing that ADHD is a delay in brain development. While these findings are reassuring for families living with ADHD, the authors of the study also remind us that theirs is only one study, that ADHD can persist into adulthood, and that the disorder is often expressed in behavior that is atypical and not just delayed.

Results from MRI research fit well with findings from fMRI studies. fMRI gives researchers information about how specific parts of the brain function. The basic idea behind fMRI is that when a particular part of the brain is "active," cells in that part of the brain called neurons use oxygen. fMRI measures changes in the amount of available oxygen. Researchers then use this information to figure out what parts of the brain are involved when people do different mental tasks. fMRI studies have found atypical patterns of brain activity in children, adolescents, and adults with ADHD relative to people without ADHD. Consistent with MRI studies, parts of the frontal lobes and the basal ganglia often show atypical activity. This is especially the case when individuals with ADHD do tasks where they need to control automatic responses or avoid being distracted by unimportant information. For example, in one common task, people are asked to say whether words like 'RED' are printed in red, blue or green ink—a challenging thing to do when words like 'RED' or 'GREEN' are printed in blue because you need to keep yourself from reading.

fMRI studies have shown changes in brain activity associated with the remission (going away with time) of ADHD symptoms. For example, in a recent study adolescents with ADHD were divided into a remitted group and a persistent group and were compared to adolescents without ADHD. Increased activity in the frontal lobes was seen in the persistent group, with less frontal activity in the remitted group and the least activity in the nonADHD group. In this study, no differences between groups were found in the basal ganglia. However, a frequent finding is that ADHD groups show less activity in



# Brain imaging and ADHD

*Continued from Page 2*

the basal ganglia relative to nonADHD groups. Importantly, other studies have shown that taking a single dose of methylphenidate (Ritalin®) can increase (and “normalize”) basal ganglia activity in the individuals with ADHD.

While most fMRI studies have used tasks that were designed to activate the frontal lobes and the basal ganglia, across studies there have also been reports that people with ADHD use parts of the brain that people without ADHD do not. Consistent with the “delayed development” findings from MRI, fMRI findings such as these have led some investigators to suggest that brain activity in ADHD looks a lot like the kind of activity we would expect to see in younger children.

All in all, researchers using brain imaging are beginning to put together some of the pieces of the ADHD puzzle. Evidence is converging to show atypical structure and function in specific parts of the brain. However, what is very exciting is that research on the brain development of children without ADHD is showing a high degree of plasticity, meaning change over time, all the way into early adulthood. Thus, future research may find that successful treatments are connected to certain brain changes during this period. Taken together, this young but growing body of research, which is happening here at the University of Pittsburgh and at other well-known universities, provides hope for finding answers to questions about why certain treatments work for some but not others, why children with ADHD are not all the same, and why ADHD goes away for some but not for others. Stay tuned for more about the new brain imaging research occurring at the Youth and Family Research Program at the University of Pittsburgh!

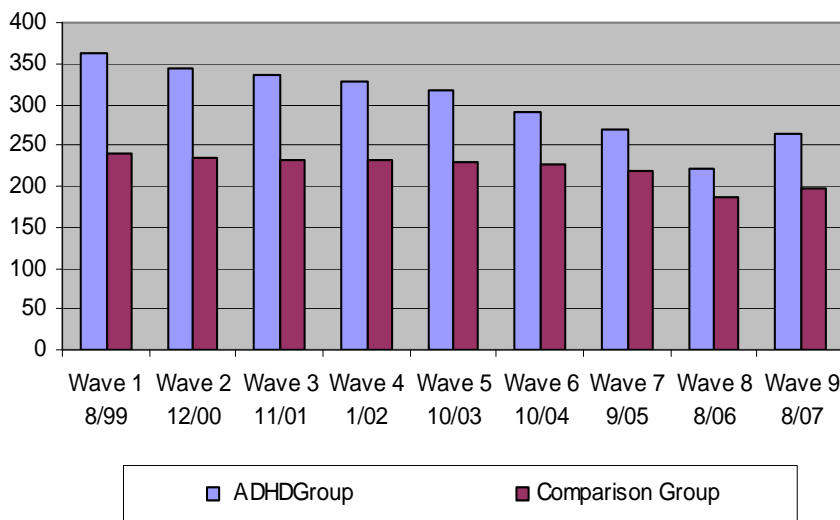
*Katerina Velanova, Ph.D.  
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University of Pittsburgh School of Medicine*

## STUDY UPDATE

Our ninth annual assessments are continuing! To date, more than 460 young adults and 520 parents have completed their ninth assessment. Be on the lookout for a letter from us in the next two weeks that will include general information about the study continuation and specific information about your next study appointment. Thanks to all of you for continuing with the study these many years!



Young Adult Visits Completed to Date



**IF YOU NEED TO  
CHANGE OR  
CANCEL YOUR  
STUDY  
APPOINTMENT,  
PLEASE CALL  
THE PALS  
SCHEDULING  
LINE AT  
412-246-5656.**



### Sudoku Classic

*Sudoku* is the Japanese word combining "number" and "single". It's origin stems from an 18th century game by a Swiss mathematician. His game was named "Latin Squares". This is truly an international game.

		1			6		3	9
	7			8	2			6
	2	5	4			7		
				6	5	1	7	8
	9						4	
5	8	7	3	1				
		2			9	8	1	
4			2	3			9	
3	1		5			6		

**GAMEPLAY:** The object of the game is to fill all the blank squares with the correct numbers. Several of the 9 x 9 grid squares already contain numbers -- you cannot change these. To work the puzzle, fill in the empty squares of the grid with the numerals 1, 2, 3, 4, 5, 6, 7, 8, and 9. The puzzle is solved when each **ROW** and each **COLUMN**, and each **3 x 3** square within the puzzle contain the numerals 1—9 with each numeral appearing only once. **SOLUTION:** An answer key is available on our website at [www.youthandfamilyresearch.com](http://www.youthandfamilyresearch.com). From our home page on the website, select *Studies*, click on *PALS*, click on *Newsletters* and on the center of the page see *Sudoku Puzzle Answer Key*.

**If you have moved, plan on moving or have changed your telephone number, please contact us at (412) 246-5656 to provide us with updated information.**



**Don't forget to check our program website!**



Visit us at

[www.youthandfamilyresearch.com](http://www.youthandfamilyresearch.com)

Not only can you find information about the Youth and Family Research Program and our Staff, you can:

- Get directions to our office and information on parking
- Contact a Youth and Family Research Program Staff Member
- Find information about community resources
- Find out about **new** research projects that are currently accepting participants

## ELECTION DAY 2008



### Step 1: Find out if you are eligible to vote.

According to the Federal Election Commission there are three requirements you must meet in order to be eligible to vote. You must be a citizen of the United States, be a resident of the state in which you are voting, and you must be at least 18 years old by Election Day.

### Step 2: Educate yourself.

Educate yourself about the candidates running for office by watching political debates and reading the newspaper. You can also check out [www.declareyourself.com](http://www.declareyourself.com) to learn more information about the candidates and other voting related issues.

### Step 3: Register to vote.

In order to vote in any election you must first register to vote. Each state has different voter registration deadlines; however, in most states (including PA) you need to be registered at least 30 days prior to the election date. For example, in order to vote in the 2008 Presidential General Election you must be registered to vote by October 6, 2008.

You can choose to register in person, by mail or online! If you want to register in person, you can fill out an application at your local County Voter Registration Office and other designated city buildings in your area. If you would rather vote by mail, you can either pick up an application from a state/city building or download an application online at [Rockthevote.com](http://Rockthevote.com).

After your registration application has been submitted, you will receive your registration ID card and polling location in the mail. Once you're registered to vote, you are not required to register again unless you change your name, political party, or residency.

### Step 4: Prepare yourself for the big day!

Before you go out and vote, make sure you have a photo ID with you. Every state has different rules and regulations about their election day ID requirements; however, in all states you must bring some form of photo ID. In most states (including PA) your drivers license or photo ID issued by the U.S Government are considered acceptable forms of ID.

### Step 5. Go out and Vote!

Remember Election Day is Tuesday, November 4<sup>th</sup>

*Jessica Casacchia, PALS Interviewer*



## Adults with ADD for Pittsburgh & Tri State Area CHADD International Chapter #477 Upcoming Meetings

**August 28, 2008**

### "Organizing Solutions for Adults with ADD/ADHD"

Meetings are held the 4th  
Thursday of each month at  
WPIC, Room 292, 3811 O'Hara at DeSoto  
St. in Oakland from 7:00 to 9:30 pm.  
For information, contact Leslie Stone  
at 412-682-6282 or visit  
[www.pittsburghadd.org](http://www.pittsburghadd.org).

## Boulevard of the Allies Bridge Construction UPDATE



Traffic patterns have changed as you enter Oakland on Forbes Avenue from downtown Pittsburgh. Two left lanes are now closed, leaving only one lane of traffic on Forbes Avenue from Moultrie Street to McDevitt Place (approximately 2,500 feet). These restrictions are expected to be in place through late August 2008. Traffic on Forbes Avenue will be required to stop at the merge point with traffic from the Parkway East off-ramp (traffic from the Parkway East will be free-flowing). Traffic delays may be significant at times.

Construction began in January, 2008 and will last through November. For more information, visit [www.otma-pgh.org](http://www.otma-pgh.org).

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Address Correction Requested