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| **Introduction**  (page 2)  Another theory about the causing agent of ADD has been found. NIMH (National Institute of Mental Health) scientists demonstrated a link between a person�s ability to pay continued attention and the level of activity in the brain. Adults were asked to learn a list of words and while they learned the list of words scientists used a PET positron emission tomography) scanner to observe the brain at work. Researchers observed the level of glucose used by the areas of the brain that inhibit impulses and control attention. This was done because Glucose is the brain�s main source of energy and the amount of glucose used is a good indicator of the brain�s activity level. In people with ADHD the brain areas that control attention use less glucose indicating that their activity is less. This research indicates that a lower level of activity in some parts of the brain may cause inattention.  The next step in the research of brain activity in ADHD patients is to see why there is less activity in these areas of the brain. Researchers want to compare mild to sever cases of ADHD in order to see the relationship of ADHD and brain activity.  Researchers are also searching for other differences between the brain of people without ADHD and people with the disorder. They are studying the way the brain develops in the fetus in order to come to a conclusion to what might disrupt the process. Throughout pregnancy and through the first year of life the brain is constantly developing. It grows from a few cells and evolves into a complex organ made of billions of specialized, interconnected nerve cells. Scientists at the NIMH and other research facilities are trying to figure out what is causing nerve cells from connecting the proper way.  After reading all of this material about brain activity and ADHD from the web page (www.mentalhealth.com) I have a question of my own to ask: Why do the symptoms of ADD typically begin only by 3 years of age and up? I have not seen this question answered in any of the material I have read and I think it is important for doctors to address this in their research.  Some causes of the "incorrect wiring" of the nerve cells in the brain can be drug use during pregnancy, toxins, and genetics. Research for many years has shown that drug use during pregnancy has damaging effects for the unborn child. They can cause the unborn child to develop improperly. If the brain develops improperly in the unborn child than it could be a cause of the "incorrect wiring." Alcohol and nicotine use during pregnancy may distort developing nerve cells. Cocaine seems to affect the normal development of brain receptors in an unborn child. Brain receptors help transmit incoming signals from skin, eyes, and ears, and help control responses to the environment. Toxins in the environment, such as lead, can also disrupt brain development. The last cause of the improper connection of nerve cells in the brain could be genetics because attention disorders tend to run in families. Children with ADHD have at least a close relative with ADHD and the majority of identical twins share the trait.  Another study, by Joel Lubar from the University of Tennessee, showed that when ADD children and teenagers performed a concentration task there was an increased amount of slow brain wave activity in the frontal lobes compared to the usual increase in fast brain wave activity that was seen in most of the control group of patients without ADD. SPECT imaging drew the same conclusions. At rest ADD people have normal activity in the brain, and when they try to concentrate they experience decreased activity in the prefrontal cortex rather than the expected increase that is seen in the normal group of patients.  "What is SPECT? It is an acronym for Single Photon Emission Computerized Tomography. It is a sophisticated nuclear medicine study that looks directly at cerebral blood flow and indirectly at brain activity (or metabolism). In this study, a radioactive isotope is bound to a substance that is readily taken up by the cells in the brain." (www.brainplace.com) This isotope is injected into a person�s bloodstream and then the SPECT camera slowly rotates around the patients head taking 3-D images of brain activity levels. These maps help physicians identify certain patterns of brain activity that accompany psychiatric and neurological illnesses. CAT scans and MRI studies are newer methods of looking at the brain, but none of these methods can show how the brain actually functions.  Just like a finding by Xavier Castellanos and Judith L. Rapoport the Dr.Amen has also found that the basal ganglia seems to be smaller in ADD patients. This region produces a large amount of dopamine. It also has a significant number of nerve passages that go through the limbic system to the prefrontal cortex. When there is not enough dopamine available in the basal ganglia then there is not enough needed energy to make the frontal lobes activated with concentration.  This site also states, like a previous site, that besides the genetic contribution to ADD, maternal alcohol or drug use, birth trauma, jaundice, brain infections and head trauma sometimes can cause ADD.  Dr. Amen has created the site www.brainplace.com He has found 5 clinical subtypes of ADD with the brain imaging procedure. He believes that it is essential to know that ADD is a developmental disorder that can be diagnosed through clinical history over a prolonged period of time. In his opinion brain imaging is not necessary to make the diagnosis of ADD, but thinks that it may be helpful in certain complicated cases.  ([Intro1](http://docs.google.com/introduction.html))([Intro2](http://docs.google.com/intro2.html))([Intro3](http://docs.google.com/intro3.html))([Intro4](http://docs.google.com/intro4.html))  [[Home](http://docs.google.com/home.html)][[Introduction](http://docs.google.com/introduction.html)][[Hypothesis](http://docs.google.com/hypothesis.html)][[Procedure](http://docs.google.com/procedure.html)][[Data](http://docs.google.com/data.html)][[Conclusions](http://docs.google.com/conclusions.html)][[Bilio/Links](http://docs.google.com/biblio.html)]  [[2002 Projects](http://docs.google.com/AP2002/index.html)][[2001 Projects](http://docs.google.com/index.html)][[2000 Projects](http://docs.google.com/AP2000/index.html)][[1999 Projects](http://docs.google.com/AP99/index.html)][[1998 Projects](http://docs.google.com/AP98/index.html)] |