

CRIME Times

Linking **Brain** Dysfunction to
Disordered/Criminal/Psychopathic Behavior

Volume 14, Number 4, 2008

Brain injury rate high for young delinquents

Rates of traumatic brain injury (TBI) are extremely high among delinquent teens, according to a new study.

Brian Perron and Matthew Howard assessed the psychiatric symptoms, substance use history, and antisocial traits and behaviors of 720 juvenile offenders in Missouri Division of Youth Services facilities between March 1 and May 31, 2003. The researchers asked each participant about any history of a head injury severe enough to cause unconsciousness for more than 20 minutes.

Perron and Howard report that nearly one in five of the offenders reported suffering a TBI at some point, with males more likely to report a TBI than females. This compares to an estimated incidence of TBI in the general U.S. population of 180-250 per 100,000 and an estimated incidence of around 415 per 100,000 in adolescents and young adults. The researchers note that their findings are consistent with those of an earlier study (Craswell et al.) which used similar TBI criteria and found that 27.7 percent of delinquents had a history of TBI.

Perron and Howard say TBIs were associated with "wide ranging psychiatric dysfunction" in the offenders,

continued on page 2

Pregnancy and diet: New study supports high fish intake

A large-scale study of Danish infants concludes that a diet high in fish aids early development, as does a longer duration of breastfeeding.

Emily Oken and colleagues studied more than 25,000 children born to mothers enrolled in the Danish National Birth Cohort, a long-term study of pregnancy, child development, and adult health outcomes. The researchers analyzed data on the mothers' fish consumption during pregnancy and the amount of time the women breastfed their infants. Information on the children's mental and physical development at 6 and 18 months of age was obtained from interviews conducted with the mothers at those times.

The researchers found a positive association between high maternal fish intake during pregnancy and children's attainment of developmental milestones. Compared with women who ate the least fish, women who ate the most fish had children 25 percent more likely to have higher developmental scores at 6 months and nearly 30 percent more likely to have higher scores at 18 months. "Longer duration of breastfeeding also was associated with improved development," the researchers say.

The researchers note that the Danish women in this study typically ate varieties of fish low in mercury, such as cod and salmon. Some fish contain high levels of mercury, which can be highly toxic to a developing fetus.

"In previous work in a population of U.S. women, we similarly

found that higher prenatal fish consumption was associated with an overall benefit for child cognitive development, but that higher mercury levels attenuated this benefit," Dr. Oken says. "Therefore, women should continue to eat fish—especially during pregnancy—but should choose fish types likely to be lower in mercury."

The findings of Oken and colleagues are consistent with a 2007 study by Joseph Hibbeln and colleagues, who found that mothers who ate large quantities of fish while pregnant had children who had more advanced motor, communication, and social skills as toddlers; exhibited better social behaviors in early childhood; and were less likely to have low verbal IQ scores at the age of 8 (see *Crime Times* Volume 13, No. 2, 2007, page 1).

—
"Associations of maternal fish intake during pregnancy and breastfeeding duration with attainment of developmental milestones in early childhood: a study from the Danish National Birth Cohort," Emily Oken, Marie Louise Østerdal, Matthew W. Gillman, Vibeke K. Knudsen, Thorhallur I. Halldorsson, Marin Strøm, David C. Bellinger, Mijna Hadders-Algra, Kim Fleischer Michaelsen, and Sjurdur F. Olsen, *American Journal of Clinical Nutrition*, Vol. 88, No. 3, 789-96. Address: Emily Oken, Department of Ambulatory Care and Prevention, Harvard Medical School and Harvard Pilgrim Health Care, 133 Brookline Avenue, Boston, MA 02215.

—and—

"Eating fish while pregnant, longer breastfeeding lead to better infant development," news release, Harvard Medical School, September 9, 2008.

U.S. consumer group calls for ban on food dyes linked to children's behavior problems

The Center for Science in the Public Interest (CSPI) is calling on the U.S. Food and Drug Administration (FDA) to ban the use of eight artificial colorings implicated in childhood behavior disorders.

Officials at CSPI cite a 2004 meta-analysis which strongly suggested an association between artificial dyes and hyperactivity, as well as a 2007

British study (see *Crime Times* Volume 13, Number 4, page 1) which found that even typical children frequently exhibited symptoms of hyperactivity when exposed to certain food dyes. As a result of the latter study and similar findings, the European Union's Environmental Committee has voted to ban artificial colors in foods for babies and young children.

In contrast, CSPI says, "The FDA has done nothing to protect children from food additives that affect children's behavior." The consumer group is calling for a ban on eight food colorings—Yellow 5, Red 40, Blue 1, Blue 2, Green 3, Orange B, Red 3, and Yellow 6—and for more research into the effects of food additives and dyes on children's behavior.

David Schab, a coauthor of the 2004 study, says, "The science shows that kids' behavior improves when these artificial colorings are removed from their diets and worsens when they're added to their diets. While not all children seem to be sensitive to these chemicals, it's hard to justify their continued use in foods—especially those foods heavily marketed to young children."

—
"CSPI urges FDA to ban artificial food dyes linked to behavior problems," news release, Center for Science in the Public Interest, June 3, 2008.

Plastic ingredient BPA again implicated in brain changes

Bisphenol A (BPA) is a component of many plastic items including food storage containers and infant toys. New research suggests that the chemical inhibits the establishment of connections between brain cells, possibly contributing to memory or learning problems or to mood disorders such as depression.

In 2005, Csaba Leranth and colleagues reported that in rats, low doses of BPA interfered with the formation of connections between cells in limbic areas of the brain. Their newer research involves primates, which are much more similar to humans.

Leranth and colleagues exposed female African green monkeys to continuous doses of BPA for 28 days, administering a dose equivalent to that considered safe for humans by the U.S. Environmental Protection Agency. Removing the monkeys' ovaries before the experiment began, the researchers administered controlled amounts of estradiol, a form of estrogen involved in the creation of nerve cell connections. Estrogen is crucial to the development and function of the hippocampus and prefrontal cortex, brain regions involved in learning, memory, behavior, and emotions.

The researchers used an electron microscope to count the nerve cell

connections (spine synapses) created between brain cells during BPA administration, and found that BPA inhibited the creation of synaptic connections in response to estradiol in the hippocampus and prefrontal cortex. "Because remodeling of spine synapses may play a critical role in cognition and mood," the researchers say, "the ability of BPA to interfere with spine synapse formation has profound implications."

Study coauthor Tibor Hajszan concludes, "Based on these new findings, we think the EPA may wish to consider lowering its 'safe daily limit' for human BPA consumption." Hajszan adds that BPA exposure may be especially risky for babies and the elderly, because they have lower estradiol levels than adults.

—
"Bisphenol A prevents the synaptogenic response to estradiol in hippocampus and prefrontal cortex of ovariectomized nonhuman primates," Csaba Leranth, Tibor Hajszan, Klara Szigeti-Buck, Jeremy Bober, and Neil J. MacLusky, *Proceedings of the National Academy of Sciences*, September 2, 2008 (epub prior to print publication). Address: Csaba Leranth, csaba.leranth@yale.edu.

—and—

"More evidence that BPA found in clear plastics impairs brain function," news release, Yale University, September 3, 2008.

TBI common in delinquents

(continued from page 1)

including depressive and anxious symptoms, antisocial behavior, and substance abuse problems. Because the study did not identify the dates of participants' TBIs, the researchers say it is not clear whether the injuries contributed to participants' behavior problems or stemmed from them. However, they cite evidence linking even mild TBI to persistent memory deficits, neuropsychiatric impairments, and psychological or social problems.

—
"Prevalence and correlates of traumatic brain injury among delinquent youths," B. E. Perron and M. O. Howard, *Criminal Behaviour and Mental Health*, Vol. 18, No. 4, 2008, 243-55. Address: B. E. Perron, beperron@umich.edu.

New findings on serotonin: brain chemical affects maternal behavior, “social aggression”

Two groups of scientists report new findings about the effects of the brain chemical serotonin on behavior.

In the first study, Jessica Lerch-Haner and colleagues explored the maternal behavior of mice with a genetic mutation that reduces serotonin function. The researchers found that while the mice had normal rates of pregnancy and gave birth to normal numbers of offspring, none of these offspring lived to five days of age. Although the mice with the mutation nursed their offspring, they failed to build good nests or to “huddle” their offspring to protect them from cold.

When the researchers partially restored the function performed by the gene, resulting in serotonin levels closer to normal, the mice exhibited more typical behavior and their offspring were more likely to live. Lerch-Haner and colleagues conclude that “serotonergic function is required for the nurturing and survival of offspring.”

In a separate study, Molly Crockett and colleagues explored the connection between serotonin and socially aggressive behavior. The researchers asked 20 young adults to fast overnight and then gave them drinks containing tryptophan (a building block of serotonin) on the first day of testing. On the second day of testing the volunteers received drinks without tryptophan, causing their serotonin levels to fall.

On both days the volunteers played an “ultimatum game” in which one player suggests a way to split a pot of money with another player. If the second player accepts the offer, both players receive a payout; however, if the second player refuses the offer, neither person receives money. In some cases the

first player offered a fair settlement (for example, dividing the money in half), while other times the first player offered an unfair split.

The researchers found that players with normal serotonin levels rejected only 67 percent of unfair offers, while those with reduced serotonin rejected 82 percent. These results, the researchers suggest, indicate that serotonin helps keep aggressive social responses—in this case, refusing a deal even if both players lose money—in check.

“When we feel something is unfair,” study coauthor Matthew Lieberman comments, “that may have to do with how our brain causes us to experience the world.”

—
“Serotonergic transcriptional programming determines maternal behavior and offspring survival,” J. K. Herch-Haner, D. Frierson, L. K. Crawford, S. G. Beck, and E. S. Deneris, *Nature Neuroscience*, August 17, 2008 (epub prior to print publication). Address: Evan Deneris,

continued on page 4

Extremely preterm children have high rate of behavior issues

Children born extremely preterm (at or before 25 weeks) are at very high risk for emotional and behavior problems, according to new research.

Muthanna Samara and colleagues conducted a study involving all extremely preterm children born in the United Kingdom and Ireland between March and December 1995, analyzing data on 200 children in the preterm group and 148 controls. The children were approximately six years old at the time of the study, and parents and teachers rated them using standardized scales measuring behavior and emotions. Among the researchers’ findings:

—Nearly 20 percent of extremely preterm children, but only 3.4 percent of control children, had total behavior scores in the clinical range.

—More than 30 percent of the extremely preterm children, compared to 8.8 percent of control children, exhibited hyperactivity.

—Extremely preterm children were more than twice as likely as controls to exhibit conduct disorder (12.5 percent vs. 5.4 percent).

The researchers say hyperactivity and conduct problems could be accounted for by cognitive deficits, but other problems—attention deficits,

peer problems, emotional problems, and poor school adaptation—occurred at an elevated rate in the extremely preterm children regardless of cognitive ability. Preterm boys were likelier than preterm girls to exhibit hyperactivity, attention deficits, and social problems, a gender pattern more pronounced than that for the control children. Parents and teachers also rated the impact of preterm boys’ behavior problems as greater than for preterm girls.

Overall, the researchers say, their study shows that “the odds for clinically relevant, pervasive behavior problems are two to nine times higher for extremely preterm children and problems are more frequent than in more-mature preterm populations.” They add, “Extremely preterm boys seem most vulnerable, and the impact on parents and teachers is considerable.”

—
“Pervasive behavior problems at 6 years of age in a total-population sample of children born at ≤ 25 weeks of gestation,” Muthanna Samara, Neil Marlow, and Dieter Wolke, *Pediatrics*, September 1, 2008 (epub prior to print publication). Address: Dieter Wolke, Department of Psychology, University of Warwick, Coventry CV4 7AL, United Kingdom, D.Wolke@warwick.ac.uk.

Genes influence male teens' attraction to delinquent peers

Male teens from high-risk families are significantly more likely to "hang out" with delinquent peers if the teens carry a particular variant of a gene affecting dopamine function, a new study reports. Association with delinquent peers is one of the strongest predictors of crime and delinquency.

Interested in whether adolescents' genetic makeup influences their likelihood of joining an antisocial peer group, Kevin Beaver and colleagues focused in particular on the dopamine transporter gene (DAT1), a gene that has several variants. One variant, the 10-repeat allele, is associated with a range of pathology including gambling problems, depression, anxiety, attention deficit hyperactivity disorder, and childhood externalizing behavior problems.

The researchers evaluated data collected at three different stages from 1,816 teens participating in a long-range study of adolescent health. To assess the teens' association with delinquent peers, they analyzed data on how often the teens associated with others who smoked, drank alcohol, and smoked marijuana (three behaviors highly correlated with delinquency).

For males from low-risk families, the researchers say, age was the only statistically significant predictor of association with delinquent peers. In males from high-risk families, however, the 10-repeat DAT1 variant was significantly related to having a delinquent peer group. Beaver and colleagues theorize that the low-risk teens' parents were able to mitigate the effects of the DAT1 variant or, alternately, that the gene's effects may be triggered by stressful environments.

The researchers say their findings reinforce those of Avshalom Caspi

and colleagues, who reported in 2002 that people abused as children were highly likely to become antisocial adults only if they carried a specific variant of a gene affecting monoamine oxidase A (MAOA) function (see *Crime Times* Volume 8, Number 4, 2002, page 1). In the absence of an abusive environment, the MAOA variant did not significantly influence adult antisocial behavior. Both Caspi's study and theirs, the authors say, reveal "the close interplay between genetic influences and environmental forces."

—
"Delinquent peer group formation: evidence of a gene x environment correlation," Kevin M. Beaver, John Paul Wright, and Matt DeLisi, *Journal of Genetic Psychology*, Vol. 169, No. 3, 2008, 227-44. Address: Kevin M. Beaver, College of Criminology and Criminal Justice, Florida State University, 634 West Call Street, Tallahassee, FL 32306-1127, kbeaver@fsu.edu.

Studies shed light on role of serotonin in behavior

(continued from page 3)

Department of Neurosciences, Case Western Reserve University, School of Medicine, 2109 Adelbert Road, Cleveland, OH 44106, esd@case.edu.

—and—

"Brain serotonin system controls maternal behavior," news release, Case Western Reserve University, August 14, 2008.

—and—

"Serotonin modulates behavioral reactions to unfairness," M. J. Crockett, L. Clark, G. Tabibnia, M. D. Lieberman, and T. W. Robbins, *Science*, June 5, 2008 (epub prior to print publication). Address: Molly Crockett, Department of Experimental Psychology, University of Cambridge, Cambridge CB2 3EB, UK, mc536@cam.ac.uk.

—and—

"Serotonin may affect our sense of fairness, scientists report," news release, University of California, June 6, 2008.

—and—

"Serotonin keeps aggression in check," Scott P. Edwards, *BrainWork*, September-October 2008, p. 7.

Lead exposure in childhood leads to adult brain shrinkage

Exposure to lead during childhood appears to cause brain regions involved in thinking and behavior to shrink, according to new research.

Kim Cecil and colleagues recruited babies from poor areas of Cincinnati into a long-term study, measuring the children's blood lead levels regularly from birth to six years. When the participants were young adults, the researchers used MRI to measure their brain volume.

"The researchers found that exposure to lead as a child was linked with brain volume loss in adulthood, particularly in men," the editors of *PLoS Medicine*, in which the article appeared, note. "There was a 'dose-response' effect—in other words, the greatest brain vol-

ume loss was seen in participants with the greatest lead exposure in childhood." The brain shrinkage was most dramatic in the prefrontal cortex, which plays a crucial role in regulating behavior, emotion, and higher brain functions such as planning and decision-making.

The fact that lead caused more brain shrinkage in males, the journal editors say, "might help to explain the higher incidence of antisocial behaviors among men than women."

—

"Decreased brain volume in adults with childhood lead exposure," K. M. Cecil, C. J. Brubaker, C. M. Adler, K. N. Dietrich, M. Altaye, J. C. Egelhoff, S. Wessel, I. Elangovan, R. Hornung, K. Jarvis, and B. P. Lanphear, *PLoS Medicine*, Vol. 5, No. 5, May 27, 2008, e112 (online). Address: Kim Cecil, kim.cecil@cchmc.org.

Study: Legal professionals see need for more info on FASD

A recent survey of judges and prosecutors in one Canadian province reveals that both groups see a clear need for more information about Fetal Alcohol Spectrum Disorder (FASD), a diagnosis that includes Fetal Alcohol Syndrome and other problems due to prenatal alcohol exposure. FASD affects nearly one in 100 people in North America, but the rate is many times higher in incarcerated populations.

Lori Vitale Cox and colleagues surveyed judges and prosecutors in New Brunswick in 2005 and 2006 and received responses from 20 judges and 19 prosecutors. Among the findings of the survey:

—Only 40 percent of judges and 26 percent of prosecutors reported themselves “prepared” to deal with actual or suspected FASD cases.

—Only three respondents in each group reported knowing where to refer individuals for FASD diagnosis, and only one respondent in the overall survey indicated any knowledge of where to refer individuals for treatment of FASD.

—Many of the surveyed judges and prosecutors do attempt to adjust their practices and decisions when they become aware that individuals may have FASD, but these legal professionals “have little recourse to diagnostic services, treatment or trained support professionals.”

These findings, the researchers say, show the need for a coordinated approach to FASD in the criminal justice system, and for additional training for legal professionals dealing with individuals with FASD. In addition, the researchers call for studies to obtain accurate information on how many individuals with FASD have encounters with the law. They also suggest that the legal community consider developing a mental health or

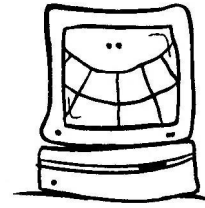
wellness court to handle the special needs of people with FASD.

In a separate publication, the *FASD Manual for Legal Professionals*, Cox and coauthor Seamus Cox describe the key impairments that can make it difficult for individuals with FASD to receive fair treatment from the justice system. These impairments, the researchers note, include deficits in language, social communication, memory, adaptive behavior, attention, visual-spatial ability, abstract reasoning, and cognitive ability.

As a result of these deficits, the researchers say, people with FASD often have great difficulty providing reliable information, testifying, exhibiting proper courtroom behaviour, or understanding why they are being detained and what their rights are. As an example they cite the case of Brian Tate, a man with FASD who was imprisoned for 11 months after he confessed to a double murder he could not have committed because he was in jail at the time.

Editor's note: Dr. Cox has generously given Crime Times permission to provide copies of the FASD Manual for Legal Professionals to interested readers. If you would like to receive a free copy via email, please send your email address to Crime Times at crimet@aol.com and specify that you are requesting the FASD manual.

—
“Knowledge and attitudes of criminal justice professionals in relation to Fetal Alcohol Spectrum Disorder,” Lori Vitale Cox, Donald Clairmont, and Seamus Cox, *Canadian Journal of Clinical Pharmacology*, Aug. 4, 2008 (epub prior to print publication). Address: Lori Vitale Cox, Nogemag Crime Prevention Partnership Program, 342 Big Cove Road, Elsipogtog, New Brunswick, Canada, lsdcox@nbnet.nb.ca.



CHECK OUT THE CRIME TIMES WEBSITE!

www.CrimeTimes.org

Features include:

- Current and past issues that can be downloaded in PDF format

- Index to individual articles searchable by title or issue number

- Site search to locate current and past articles

- An online survey—let us know what you like about Crime Times, and what we can improve

- RSS Feed

- All content is accessible free of charge.

- Although we can't respond to emails, we'd like to hear from you. Email us at: crimet@aol.com

- If you'd like to be placed on our email list, send your email address to us at info@CrimeTimes.org or sign up on our website, and we'll email you each time our website is updated.

Why don't psychopaths learn from their mistakes? Dutch research offers new insights

Psychopaths are ruthless individuals characterized by shallow emotions, a lack of empathy or guilt, manipulative behavior, and narcissism. Because they are poor at adapting their behavior to societal norms, these people often wind up in prison and frequently become repeat offenders. A new study by Inti Brazil and colleagues suggests that psychopaths may have trouble

learning from their mistakes because they are impaired in one aspect of error processing.

Typically when people make mistakes, their brainwave tracings first show a quick response (called error-related negativity or ERN) and then show a slower second response (called error positivity or Pe). The ERN can occur even before a person consciously realizes that a mistake

was made, while the Pe is linked to later stages in which conscious error recognition occurs.

Brazil and colleagues monitored the brainwaves of 16 violent male psychopaths and 18 control subjects during a task in which participants had to press buttons in response to viewing specific letters in a series. In one condition, participants also signaled each time they committed an error.

Both groups showed similar ERN patterns, and both showed a normal slowing after committing an error. However, the psychopaths had significantly lower Pe amplitudes and were less likely to push the button to signal their errors than the control group.

These findings, the researchers say, "indicate that psychopathic individuals show unimpaired early processing of error information, while showing deficits in the later stages implicated in controlled behavioral adaptation." This pattern, they say, is consistent with compromised function of the anterior cingulate cortex (ACC), where the Pe wave is generated. The ACC, they note, "is thought

continued on page 7

Fatty acids help significant number of kids with ADHD

Many but not all children with attention deficit hyperactivity disorder (ADHD) benefit from taking a combination of omega-3 and omega-6 fatty acids, according to a new study.

Mats Johnson and colleagues conducted a randomized, placebo-controlled evaluation of the effects of a supplement containing two omega-3 fatty acids—docosahexaenoic acid (DHA) and eicosapentaenoic acid (EPA)—and one omega-6 fatty acid (gamma linoleic acid) along with vitamin E. Seventy-five children entered the study, of whom 64 completed phase 1 and 59 completed both phases. Children took either the supplement or the placebo for three months, after which all the children took the supplement for three months.

The researchers report that a majority of children taking the supplements did not show any improvement. However, 26 percent responded with more than 25 percent reduction of ADHD symptoms. At the end of the second phase, in which all children took the supplements, 47 percent showed significant improvement and 1 in 8 showed reductions of more than 50 percent in ADHD symptoms.

Children with attention problems

alone were more likely to be responders than children with both attention problems and hyperactivity. Also, children with both ADHD and other developmental problems were more likely to respond to the treatment than other children. More boys than girls responded to the treatment, but the researchers note that few girls participated in the study.

—
"Omega-3/omega-6 fatty acids for attention deficit hyperactivity disorder," Mats Johnson, Sven Östlund, Gunnar Fransson, Björn Kadesjö, and Christopher Gillberg, *Journal of Attention Disorders*, April 30, 2008 (epub prior to print publication). Address: Mats Johnson, mats.k.johnson@vgregion.se.

Why Crime Times?

The more we learn about the brain dysfunction that underlies much delinquency and criminal behavior, the more successful we will be in truly rehabilitating offenders and preventing at-risk children from turning to lives of crime. The purpose of *Crime Times*, a free publication sponsored by the Wacker Foundation, is to foster this effort by reporting state-of-the-art worldwide research on biological causes and treatment of aberrant behavior. It is our hope that physicians, researchers, educators, law enforcement professionals, and parents can use the information in *Crime Times* to build a better, safer future for at-risk children and for the communities in which they live.

Scratch-and-sniff test offers clues about ADHD, PTSD

Australian researchers report that both children with attention deficit hyperactivity disorder (ADHD) and veterans with post-traumatic stress disorder (PTSD) have difficulty identifying odors, a finding that points to impairment of a specific brain region.

The researchers note that while a region in the limbic system initially detects odors, the orbital prefrontal cortex (OFC) identifies what those odors are—for instance, discerning the difference between chocolate and gasoline. Thus, the researchers note, “Tests of smell identification are a well-recognized means of indirectly assessing the integrity of the OFC,” a brain region that plays a key role in controlling emotions and suppressing aggressive and impulsive behaviors.

One study by J. F. Dileo and colleagues, comparing 31 Vietnam war veterans with PTSD to 31 age- and gender-matched controls on a “scratch-and-sniff” test, found that the veterans with PTSD had significantly more difficulty identifying odors correctly. This was true even though the PTSD group and the controls performed equally well on cognitive tests. In addition, Dileo and colleagues say, odor identification deficits significantly predicted aggressive and impulsive behavior.

“This research,” they say, “contributes to emerging evidence of orbitoprefrontal dysfunction in the pathophysiology underlying PTSD.” If verified, they say, their finding may help professionals identify PTSD sufferers who may be more prone to violent or impulsive behavior.

In a separate study, Felicity Karsz and colleagues (including several researchers from the PTSD study) tested odor identification ability

in 44 children with ADHD and 44 age- and gender-matched children without the disorder. The researchers report that children with ADHD “demonstrated significantly poorer olfactory identification ability compared to healthy controls.”

In particular, the ADHD children showed deficits in right-nostril identification of odors. The researchers say this “could potentially be due to predominantly right OFC dysfunction or developmental delay” since primary olfactory nerve projections from the right nostril go to the right OFC. The finding, they say, “is consistent with reports highlighting underactivation of the right OFC in children with ADHD and right hemisphere volume reductions in the prefrontal and OFC regions in children with ADHD.”

In this study, no differences in odor identification ability were detected between aggressive and nonaggressive children with ADHD.

—
“Olfactory identification dysfunction, aggression and impulsivity in war veterans with post-traumatic stress disorder,” J. F. Dileo, W. J. Brewer, M. Hopwood, V. Anderson, and M. Creamer, *Psychological Medicine*, Vol. 38, 2008, 523-31. Address: Warrick J. Brewer, ORYGEN Research Centre (Locked bag 10), Parkville, Victoria, 3052, Australia, w.brewer@unimelb.edu.au.

—and—
“Olfactory impairments in child attention-deficit/hyperactivity disorder,” Felicity R. Karsz, Alasdair Vance, Vicki A. Anderson, Peter G. Brann, Stephen J. Wood, Christos Pantelis, and Warrick J. Brewer, *Journal of Clinical Psychiatry*, Vol. 69, 2008, 1-7. Address: Warrick J. Brewer, ORYGEN Research Centre (Locked bag 10), Parkville, Victoria, 3052, Australia, w.brewer@unimelb.edu.au.

Dutch study offers insight into psychopathic brain

(continued from page 6)

to use reinforcement information to adapt behavior.”

—
“Early and late components of error monitoring in violent offenders with psychopathy,” Inti A. Brazil, Ellen R. A. de Bruijn, Berend H. Bulten, A. Katinka L. von Borries, Jacques J. D. M. van Lankveld, Jan K. Buitelaar, and Robbert J. Verkes, *Biological Psychiatry*, 2008, in press. Address: Inti A. Brazil, Pompekliniek, P.O. Box 31435, 6503 CK Nijmegen, The Netherlands, i.brazil@pompestichting.nl.

Quotable...

“Recent research in behavioral genetics indicates that callous-unemotional traits and antisocial tendencies, likely precursors to [psychopathy], are highly heritable. There is no evidence that psychopathy can result solely from social or environmental influences. This doesn’t mean that some people are destined to become psychopaths, only that the process of socialization is much more difficult for those with early indications of the precursors of the disorder.”

—Robert Hare,
expert on psychopathy,
in *Fraud Magazine*,
August/September 2008

The Wacker Foundation is interested in hearing from researchers with proposals for research projects. Projects should concern biological influences on disordered, criminal, or psychopathic behavior. Proposals or letters of inquiry can be sent to:
The Wacker Foundation
8523 Thackery, #1115
Dallas, TX 75225

PROFESSIONAL ADVISORY BOARD

Herbert Needleman, M.D.
Director, Lead Research Group
University of Pittsburgh Medical Center
Pittsburgh, PA

The Honorable Richard L. Nygaard
Circuit Judge
United States Court of Appeals for the Third Circuit
Erie and Philadelphia, PA

Adrian Raine, D. Phil., Professor
Department of Criminology
University of Pennsylvania
Philadelphia, PA

Ann Streissguth, Ph.D.
Emeritus Professor
Dept. of Psychiatry & Behavioral Sciences
University of Washington School of Medicine
Seattle, WA

Bernard Weiss, Ph.D.
Professor of Environmental Medicine &
Professor of Pediatrics
Department of Environmental Medicine
University of Rochester Medical Center
Rochester, NY

Stuart C. Yudofsky, M.D., Chairman
Department of Psychiatry
Baylor College of Medicine
Houston, TX

QUOTABLE "In comprehensive cost-benefit analyses of chemicals in our environment, behavioral harm may often be more costly or more widespread than cancer and other mortal diseases. As neuroscientists and evolutionary psychologists unravel biological factors in human social behavior, scientists and policymakers in other fields can no longer ignore the costs of learning disabilities, substance abuse, or criminal behaviors that have often proven resistant to traditional treatments or governmental policies based on sociological and economic theories of behavior."

—Roger D. Masters, in
"The social implications of evolutionary psychology: linking brain biochemistry, toxins, and violent crime," in
Evolutionary Psychology and Violence: A Primer for Policymakers and Public Policy Advocates,
Praeger/Greenwood, 2002

CRIME Times is published quarterly
by the Wacker Foundation, a nonprofit organization.
Editor: A. K. Blake
PMB 132, 1106 N. Gilbert Road, Suite 2 • Mesa, AZ 85203
© Copyright 2008

2008
Volume 14, Number 4

The Wacker Foundation
CRIME Times
PMB 132
1106 North Gilbert Rd., Suite 2
Mesa, AZ 85203

Nonprofit
Organization
U.S. Postage
PAID
Phoenix, AZ
Permit #1645