CRIME Times

Linking Brain Dysfunction to Disordered/Criminal/Psychopathic Behavior

Volume 9, Number 3, 2003

Mice, monkeys offer clues to role of genes in violence and psychiatric disorders

By investigating the genes of animals, researchers are gaining new insights into the influence of genes on the mental disorders that plague humans. In particular, new studies reveal the strong role that genes play in schizophrenia, depression, aggression, and anxiety. Among recent findings:

Suspected schizophrenia gene identified

It's likely that more than a dozen genes affect your chances of developing schizophrenia, but Susumu Tonegawa and colleagues recently discovered a gene that may contribute to a large percentage of cases of the disease. Studying short-term memory in mice, they created "conditional knockout" mice genetically altered to lack calcineurin (an enzyme involved in memory) in their forebrains. The mice exhibited specific memory deficits much like those seen in humans with schizophrenia, and also developed schizophrenia-like behaviors, including extreme withdrawal.

To determine the relevance of this finding to humans, Tonegawa collaborated with Maria Karayiorgou to see if they could link any calcineurin-related gene to schizophrenia. Studying 410 families with histories of schizophrenia, they identified a specific haplotype (closely related variants of a gene, generally inherited as a unit) of a gene called PPP3CC—which codes for a subunit of calcineurin—in 38 percent of parents of schizophrenics. This haplotype was transmitted to children with schizophrenia significantly more often than would be predicted by chance. Moreover, it occurred on chromosome 8, which already is strongly linked to schizophrenia.

Karayiorgou says the findings indicate that a disruption in calcineurin signaling may be a powerful contributor to schizophrenia, and that this discovery could lead to more effective treatments targeted at this enzyme.

Stress-linked depression: candidate gene pinpointed

Many people thrive even when their lives become highly stressful, while many others

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Good diet, exercise, enriched environment lower risk of later antisocial behavior and schizotypal personality

A new study indicates that providing children with a better diet, more exercise, and an enriched early education may dramatically reduce the chances that they will become antisocial or develop schizotypal symptoms in the late teen or early adult years.

Adrian Raine and colleagues assigned 83 children — all participants in the long-term Mauritius Child Health Project — to an experimental enrichment group, comparing them afterward to several hundred children who did not receive special intervention. Control children were matched on a variety of variables including autonomic function, temperament, nutritional status, cognitive functioning, and demographic factors. The intervention, which began when the children were three and lasted for two years, consisted of:

- A structured nutrition program, offered by the children's nursery school, which provided the children with a hot meal, salad, milk, and fruit juice every day (compared to the typical nursery-school diet of bread and/or rice).
- A program of physical exercise including gymnastics, outdoor games, and free play.
- An enhanced educational program focusing on verbal skills, visuospatial coordination, conceptual skills, memory, and sensation and perception.

The researchers conducted follow-ups when the participants were 17 and 23 years old, using both self-reports and formal measurements to evaluate subjects for the presence of antisocial behavior, criminal behavior, conduct disorder, or schizotypal symptoms (which include unusual perceptual experiences, lack of close friends, and cognitive disorganization). Their data showed that subjects who had participated in the early enrichment program exhibited lower scores for schizotypal personality and antisocial behavior at the age of 17, and for criminal behavior at the age of 23. Raine et al. note, "The benefi-

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EDITORIAL: INDICTING THE INNOCENT

A recent *Dallas Morning News* article about a retiring local judge quotes him as saying, "About 10 percent of people in prison are sociopaths or pedophiles. The other 90 percent are people whose family failed them."

The judge is stating an almost universal belief: that only failures in nurturing or discipline can cause children to become robbers, rapists, or murderers. This belief, however, is dead wrong—and it does a hideous injustice to millions of dedicated parents who are nothing short of heroic in their efforts to help their troubled children.

The truth is that millions of parents are struggling to cope with children who simply can't be taught, disciplined, or guided. That's because these children's aberrant behaviors stem not from a *societal* syndrome but from a *biological* syndrome whose symptoms are so common that experts who deal with troubled children can spot them almost instantly. This symptom pattern, dubbed "dyslogic syndrome" by learning disabilities advocate John Wacker, includes:

- *Early behavior problems—often detectable even in the first year of life*
- *Lack of warmth*
- *Lack of desire to please*
- *Few friends*
- *Lack of empathy for animals and people*
- *Lack of remorse*
- *Difficulty in school*
- *Below-normal IQ*
- *Irresponsibility*
- *Poor judgment and poor logic*
- *Failure to learn from experience*
- *Callousness*
- *Inability to realize the consequences of actions*
- *Lack of impulse control*
- *Aggression*
- *Recklessness*
- *Promiscuous sexual behavior*
- *Delinquent or criminal behavior*

As *Crime Times* readers are aware, all of these behaviors occur far more often in children with neurological dysfunction than in children with healthy brains. The causes of such dysfunction, which include gene flaws, toxic exposure, nutrient deficiencies, prematurity, and overt brain defects—to name just some—can be addressed only if we are intelligent enough to bring our thinking in line with scientific evidence.

It is certainly true that some parents of dyslogical children behave badly themselves, which is not surprising because of the powerful effects of genes on behavior (see *Crime Times* Vol. 7, No. 4, 2001). But the vast majority of parents of troubled children are good and loving people who try everything possible to help their children. They see psychiatrists. They try behavior modification plans and special schools. They try unconditional love, "tough love," and every other approach the experts recommend. For the most part, none of this works—but it is not their fault, any more than a parent is at fault for failing to cure a child's leukemia or heart defect.

Dyslogic is the end result of a malfunctioning brain, not a failing of parents or society. Until we recognize this, all of us will be at the mercy of dyslogical children and their demons. And the children themselves will be at the mercy of brain disorders that remain undiagnosed, untreated, and fully capable of ruining their lives and the lives of other innocent people—including their parents.

Violent, antisocial offenders: different even during sleep?

Habitually violent and antisocial offenders behave far differently from the rest of us, and those differences appear to extend even to how they sleep.

Abnormal sleep patterns are associated with many psychiatric disorders, and Nina Lindberg and colleagues decided to see if this was true for violent and antisocial behavior as well. The researchers studied 19 drug-free violent male offenders between the ages of 18 and 49 who were diagnosed with antisocial personality disorder, comparing them to 11 controls matched for gender, age, and weight. Lindberg et al. performed several tests of sleep patterns, measuring rapid eye movement (REM) sleep as well as slow-wave sleep.

The researchers report, "The most striking finding was the high amount of slow-wave sleep, particularly the deepest S4 stage (17 percent as compared with 6 percent in healthy controls) in males with antisocial personality disorder." In addition, an EEG spectral analysis showed elevated delta and theta power.

Slow-wave sleep typically decreases with age, and this was also true for the antisocial subjects in this study. Lindberg suggests, "It is possible that the decline in slow wave sleep that normally occurs in the course of aging is delayed in antisocial personality disorder."

—

"Sleep among habitually violent offenders with antisocial personality disorder," Nina Lindberg, Pekka Tani, Björn Appelberg, Dag Stenberg, Hannu Naukkarinen, Ranan Rimón, Tarja Porkka-Heiskanen, and Matti Virkkunen, *Neuropsychobiology*, Vol. 47, No. 4, 2003, 198-205. Address: Nina Lindberg, Institute of Biomedicine, Department of Physiology, Biomedicum Helsinki, P.O.

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Mice, monkeys teach researchers about effects of genes

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develop depression in response to chronic stress. Laboratory research shows that the same is true of some animals, and that the brain chemical serotonin plays a role in this phenomenon.

In 2000, researchers reported that knockout mice lacking the serotonin transporter gene (5-HTT), which is involved in "recycling" serotonin after it is released into the synapses between neurons, behaved normally in the absence of stress but became unusually fearful and developed elevated levels of stress-related hormones when placed in stressful situations. Similarly, rhesus macaques bred to carry a short version of the serotonin transporter gene exhibited impaired serotonin function when raised in stressful conditions, but not when raised in normal environments.

To determine if these findings translated to humans, Avshalom Caspi, Terrie Moffitt and colleagues recently examined data from 847 New Zealanders participating in a large-scale study. Of the group, 17 percent carried two copies of the "stress sensitive" short version of the 5-HTT gene, 31 percent carried two copies of the "stress protective" long variant, and 51 percent had one copy of each gene.

The researchers narrowed their study group to people who had suffered multiple stressful life events between the ages of 21 and 26. Among this group, the researchers found, 43 percent of those with two copies of the short variant developed depression, compared to 17 percent of those with two copies of the long variant. (Subjects with one long and one short variant had an intermediate risk.) Moreover, among subjects who experienced multiple stressors, 11 percent with two short gene variants contemplated or attempted suicide, compared to 4 percent with two long gene variants.

These findings, the researchers say, provide "evidence of a gene-by-environment interaction, in which an individual's response to environmental insults is moderated by his or her genetic makeup."

"Super-aggressive" knockout mice created

Earlier this year, Evan Deneris and colleagues reported that in knockout mice missing a gene called Pet-1, most neurons critical to serotonin function fail to develop at all, and remaining neurons are defective. Another group of researchers led by David Sweatt initially designed a study to investigate these mice for possible memory deficits, but switched gears when they discovered that the Pet-1 knockout mice were remarkably vicious and anxious.

"It was shocking how aggressive they were," Sweatt said. "None of us has ever seen anything like it before.... they were really mean."

In addition, Sweatt and his colleagues found, the mice were highly anxious, huddling at the sides of a test chamber rather than eventually wandering out like normal mice. Says Deneris, "The behavior of Pet-1 knockout mice is strikingly reminiscent of some human psychiatric disorders that are characterized by heightened anxiety and violence."

He adds, "This is the first gene shown to impact adult emotional behavior through specific control of fetal serotonin neuron development."

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"Evidence for association of schizophrenia with genetic variation in the 8p21.3 gene, PPP3CC, encoding the calcineurin gamma subunit," D. J. Gerber, D. Hall, T. Miyakawa, S. Demars, J. A. Gogos, M. Karayiorgou, and S. Tonegawa, *Proceedings of the National Academy of Sciences*, Vol. 100, No. 15, July 22, 2003, 8993-8. Address: M. Tonegawa, Department of Biology, Massachusetts Institute of Technology, Cambridge, MA 02139.

—and—

"New clues to schizophrenia come from mice, humans," news release, Rockefeller University, June 30, 2003.

—and—

"Influence of life stress on depression: moderation by a polymorphism in the 5-HTT gene," Avshalom Caspi, Karen Sugden, Terrie E. Moffitt, Alan Taylor, Ian W. Craig, HonaLee Harrington, Joseph McClay, Jonathan Mill, Judy Martin, Anthony Braithwaite, and Richie Poulton, *Science*, Vol. 301, No. 5631, July 18, 2003, 386-9. Address: Terrie Moffitt, t.moffitt@iop.kcl.ac.uk.

—and—

"Gene more than doubles risk of depression following life stresses," news release, National Institute of Mental Health, July 17, 2003.

—and—

"Pet-1 ETS gene plays a critical role in 5-HT neuron development and is required for normal anxiety-like and aggressive behavior," T. J. Hendricks, D. V. Fyodorov, L. J. Wegman, N. B. Lelutiu, E. A. Pehek, B. Yamamoto, J. Silver, E. J. Weeber, J. D. Sweatt, and E. S. Deneris, *Neuron*, Vol. 37, No. 2, January 23, 2003, 233-47.

—and—

"'Mad mice' provide unique model to study anxiety, hyper-aggression," Anissa Anderson Orr, Baylor College of Medicine newsletter, March 2003.

—and—

"Researchers discover anxiety and aggression gene in mice," news release, Case Western Reserve University School of Medicine, January 23, 2003.

Violent, antisocial offenders: diifferent even during sleep?

(continued from page 2)

Box 63, University of Helsinki, FI-00014 Helsinki, Finland.

—and—

"Sleep in mental and behavioural disorders," Nina Lindberg, doctoral dissertation, May 2003.

Early head injuries a risk for later violence; link to schizophrenia also suspected

A recent study confirms the link between head injury in childhood and violence in adulthood, while another study suggests a link between even minor head injuries and schizophrenia.

José León Carrión and colleagues compared the histories of violent and nonviolent offenders, focusing on past school performance and whether or not subjects had a history of head injuries. While both groups had done poorly in school, the researchers say, "What differentiated the violent from the non-violent group was a history of having suffered head injuries that were never treated."

The new findings are consistent with earlier research showing that even mild head injuries can lead to hyperactivity, aggression, and antisocial behavior (see *Crime Times* Vol. 4, No. 2, 1998, page 5), and with findings linking head injuries to later aberrant behavior, including domestic abuse and pedophilia (see *Crime Times* Vol. 8, No. 3, 2002, page 4; and Vol. 9, No. 1, 2003, page 3).

In related research, Philip AbdelMalik and colleagues studied children from 23 families with multiple occurrences of schizophrenia, comparing schizophrenic individuals to their unaffected siblings. The researchers found that schizophrenic subjects were significantly more likely than their non-schizophrenic siblings to have suffered childhood head injuries. In addition, they discovered that among the schizophrenic subjects, those with a history of head injuries during childhood had developed schizophrenia an average of five years earlier than those with no history of head injuries. Even though subjects had sustained only mild head injuries, the severity of the injury correlated with the age of onset of schizophrenia.

The researchers conclude, "Mild childhood head injury may play a role in the expression of schizophrenia in families with a strong genetic predisposition."

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"Blows to the head during development can predispose to violent criminal behaviour: rehabilitation of consequences of head injury is a measure for crime prevention," José León-Carrión and Francisco Javier Chacartegui Ramos, *Brain Injury*, Vol. 17, No. 3, March 2003, 207-16. Address: José León Carrión, Human Neuropsychology Laboratory, Department of Experimental Psychology, University of Seville, Spain.

—and—

"Childhood head injury and expression of schizophrenia in multiply affected families," Philip AbdelMalik, Janice Husted, Eva W. C. Chow, and Anne S. Bassett, *Archives of General Psychiatry*, Vol. 60, No. 3, March 2003, 231-6. Address: Philip AbdelMalik, Centre for Addiction and Mental Health, University of Toronto, Toronto, Ontario, Canada M6J 1H4.

Dopamine, serotonin role seen in aggressive psychopathy

Psychopathic offenders are amoral, shallow, remorseless, impulsive, narcissistic, and lacking in empathy. Previous studies have revealed abnormalities in the brain structure of criminals with these traits (see *Crime Times* Vol. 7, No. 2, 2001, p. 1; and Vol. 6, No. 2, 2000, p. 1), and a new study offers strong evidence of biochemical anomalies in psychopaths who are aggressive.

Henrik Soderstrom et al. recently studied 28 violent and sexual offenders (27 males and 1 female) between the ages of 18 and 45. The researchers measured cerebrospinal fluid (CSF) concentrations of homovanillic acid (HVA, a metabolite of dopamine), and 5-hydroxyindoleacetic acid (5-HIAA, a metabolite of serotonin), noting that "the ratio between the metabolites of serotonin and dopamine is highly constant, and an increased HVA:5-HIAA ratio indicates an impaired serotonergic modulation of dopamine activity."

The researchers found that high ratios of HVA to 5-HIAA were strongly associated with psychopathic traits, and in particular with behavioral traits such as impulsivity, irresponsibility, aggression, and need for stimulation. In addition, a high ratio of HVA to 5-HIAA was associated with a history of childhood hyperactivity or conduct disorder.

Soderstrom et al. say their findings suggest a high turnover of dopamine in the brains of aggressive psychopaths, combined with a dysregulation of serotonin. They conclude that "dopamine modulating drugs, alone or in combination with serotonin reuptake inhibitors (or drugs with combined dopamine and serotonin modulating action), might be of interest in treatment of aggressive psychopathy."

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"New evidence for an association between the CSF HVA:5-HIAA ratio and psychopathic traits," H. Soderstrom, K. Blennow, A-K Sjodin, and A. Forsman, *Journal of Neurology, Neurosurgery and Psychiatry*, Vol. 74, 2003, 918-21. Address: H. Soderstrom, Department of Forensic Psychiatry, Box 4024, 422 04 Hisings Backa, Sweden, henrik.soderstrom@rmv.se.

Meningitis infection linked to later behavior problems

A new study by researchers in the UK confirms that a bout with meningitis early in life can cause serious social and behavior problems in later years.

Susan Halket and colleagues surveyed the parents and teachers of 739 children who survived episodes of infantile meningitis in England and Wales during the late 1980s, comparing them to 606 matched controls. The researchers report that:

- Forty-six percent of parents of children who had suffered from meningitis with complications reported that their children—now teenagers—had behavior problems. Only 21 percent of the parents of control subjects reported such problems.
- Teachers rated 37 percent of the children who had suffered meningitis with complications as having behavior problems, compared to only 23 percent of the controls.

Halket et al. found that the elevated risk of behavioral problems was the same for children who suffered from meningitis during the first month after birth as it was for those who contracted meningitis later in infancy.

The findings are in line with a study in 2002 that focused on South African children who had recovered from meningitis stemming from infection with tuberculosis. In that study, involving 21 meningitis survivors and 21 controls, J. W. Wait and colleagues found that "All 21 tuberculous meningitis (TBM) group subjects displayed symptoms of attention deficit hyperactivity disorder." In addition, the TBM group were rated as more aggressive, obsessive, compulsive, and unpopular than the other subjects.

Meningitis, which can occur as a result of either viral or bacterial infection, is an inflammation of the membranes covering the brain and spinal cord. While bacterial meningitis tends to be far more severe than viral meningitis, either form of the disease can result in cognitive and behavioral changes.

Commenting on the Halket et al. study, Linda Glennie, head of research and medical information for the Meningitis Research Trust in the U.K., said, "Many people who have had meningitis and septicemia [blood poisoning, a fairly common complication of meningitis] experience problems with concentration and memory. These are the types of things that get them labeled as 'children with problems.'"

> Nearly half of the parents of teens who had suffered during childhood from meningitis with complications reported that their children—now teenagers—had behavior problems, compared with only one-fifth of parents of other teens.

—

"Long term follow up after meningitis in infancy: behaviour of teenagers," S. Halket, J. de Louvois, D. E. Holt, and D. Harvey, *Archives of Disease in Childhood*, Vol. 88, No. 5, May 2003, 395-8. Address: Susan Halket, Department of Paediatrics, Imperial College School of Medicine, Hammersmith Hospital, London, UK.

—and—

"Meningitis link to bad behaviour," BBC News, April 23, 2003.

—and—

"Tuberculosis meningitis and attention deficit hyperactivity disorder in children," J. W. Wait, L. Stanton, and J. F. Schoeman, *Journal of Tropical Pediatrics*, Vol. 48, No. 5, October 2002, 294-9. Address: J. W. Wait, Department of Psychology, University of Stellenbosch, Republic of South Africa, jww1@sun.ac.za.

Good diet linked to lower risk of antisocial behavior, schizotypal disorder

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cial effects associated with the intervention tended to be greater for children who were malnourished at age 3, particularly with respect to outcomes for schizotypal personality at ages 17 and 23 and conduct disorder at age 17." This indicates, they say, that the nutritional component of the intervention played an important role in the children's outcome—a finding they say is consistent with other studies linking nutritional deficits to schizophrenia, schizoid personality disorder, and antisocial behavior (see *Crime Times* Vol. 8, No. 3, 2002, page 1).

The researchers conclude that their findings "may be particularly relevant to poor rural areas of the United States, such as the Mississippi delta region, and also to U.S. inner cities, where rates of both malnutrition and behavioral problems in children are relatively high." In addition, they say, given the similarities between schizotypal symptoms and schizophrenia, their data suggest the possibility that early dietary enrichment could delay or even prevent the development of schizophrenia itself.

In related research, Raine, Jianghong Liu, and colleagues assessed children from the Mauritius study for malnutrition at age 3, and measured their cognitive skills at the ages of 3 and 11. The researchers report that the children who were malnourished at the age of 3 showed reduced verbal and full-scale cognitive ability at that time, and that by the age of 11 they exhibited lower verbal, spatial, and full-scale IQ, poorer reading ability, and academic

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Good diet linked to lower risk of antisocial behavior, schizotypal disorder

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and neuropsychologic deficits. "Children with three indicators of malnutrition," the researchers report, "had a 15.3 point deficit in IQ at age 11 years." The findings were true for all ethnic groups and both sexes, were stable over time, and remained significant when the researchers controlled for psychosocial adversity.

They conclude, "Findings support the view that early childhood malnutrition is a potential risk factor for later cognitive deficits and, from a pediatric perspective, raise the possibility that promoting early childhood nutrition could enhance children's long-term cognitive development and school performance."

—

"Effects of environmental enrichment at age 3-5 years on schizotypal personality and antisocial behavior at ages 17 and 23 years," Adrian Raine, Kjetil Mellingen, Jianghong Liu, Peter Venables, and Sarnoff A. Mednick, *American Journal of Psychiatry*, Vol. 160, No. 9, 2003, 1-9. Address: Adrian Raine, Department of Psychology, University of Southern California, Los Angeles, CA 90089-1061, raine@usc.edu.

—and—

"Malnutrition at age 3 years and lower cognitive ability at age 11 years," Jianghong Liu, Adrian Raine, Peter H. Venables, Cyril Dalais, and Sarnoff A. Mednick, *Archives of Pediatric and Adolescent Medicine*, Vol. 157, June 2003, 593-600. See address above.

Crime Times is interested in hearing from readers who are conducting research pertaining to biological influences on criminality and psychopathology. Reprints of research articles are appreciated.

Can maternal diet at conception cause prematurity?

New research indicates that many cases of prematurity—one of the strongest predictors for later academic, social, and behavioral problems—result from missing nutrients in mothers' diets before and at the time of conception.

Studying sheep, Frank Bloomfield and colleagues found that half of the animals put on a moderately restricted diet around the time of conception had premature offspring, compared to none of a control group allowed to eat a normal amount of food.

The researchers put 10 ewes on restricted diets for 60 days before they mated and 30 days afterward. The diet lowered the animals' body weight by 15 percent. Compared to 8 sheep fed normal diets, the "dieting" sheep delivered an average of one week earlier (139 days vs. 146 days). In addition, while both groups of offspring were of normal weight, the offspring of the limited-diet sheep were sicklier.

Peter Gluckman, head of the institute that sponsored the study, commented that the research shows that "a mild, relatively uninteresting and relatively brief incident at the beginning of pregnancy can change something as profound as the length of pregnancy."

The researchers say that in the sheep fed restricted diets, levels of two hormones—cortisol and adrenocorticotropin—surged earlier in pregnancy than is normal. These hormones play a role in maturation of the lungs, liver, and other organs in the developing fetus. The researchers speculate that early in embryonic development the mother's body sends a "signal of some sort" that informs the fetus about its nutritional status, and that the embryo in turn may modify its growth rate and gestation period. They also theorize that it may be impossible to alter this developmental trajectory afterward, as their sheep were well-fed later in pregnancy but still delivered premature offspring.

The researchers say that based on their findings, "women of child-bearing age should eat a healthy, balanced diet and should avoid any extremes of food intake."

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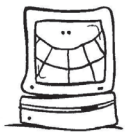
"Hungry ewes deliver offspring early," Frank Bloomfield et al., *Science*, Vol. 300, April 25, 2003, 561-2. Address: Frank Bloomfield, The Liggins Institute, University of Auckland, Private Bag 92019, Auckland, New Zealand.

—and—

"Hungry ewes deliver early offspring," *ScienceNow*, April 24, 2003.

—and—

"Low-cal diet at conception linked to preterm birth," Reuters Health, April 24, 2003.



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OUR READERS RESPOND.....

Editor's note: We receive many wonderful letters from our readers, and we thank you all for your enlightening and often inspiring comments. While our space demands rarely allow us to publish letters, we'd like to share a sampling of our mail in this issue:

—§—

I am a constant reader of your site and the mother of [an adult] son who had and has behavior problems from the age of 2 years after consuming certain foods and food additives... he also has had a brush with the law [and] has been given the title of attention deficit hyperactivity disorder. I have been searching for a number of years for the reasons as to why some of us are more sensitive than others, I have to say without much help from the medical profession! Your site is great reading and of great help to many.

—§—

Thank God someone understands! My husband was diagnosed as bipolar several years into our marriage, but due to a lack of support from police and family, I have had to file police reports against him when he became manic and violent toward me. I have been labeled a victim, a battered wife, co-dependent, etc.; and my husband (a loving, diligent father and husband) a criminal, a rapist, a wife-beater, a misogynist. Until the rest of society wakes up to the pain caused by criminalizing brain dysfunction, families like ours will continue to suffer not only from the primary pain of violence and disconnection, but also from the lack of insight on the part of society.

I am thrilled to have stumbled upon your site... and will follow and perhaps assist your work, in the hopes that it will assist others like myself who, in their moments of crisis, cannot obtain proper medical care for their violent loved ones.

—§—

I am employed as a juvenile probation officer. I have just completed reviewing an issue of Crime Times. This specific issue dealt with ADHD and its relationship to criminal behavior. Your publication provided research-based findings to questions that I have been seeking for years.

—§—

I have been tracking the newsletter online and am impressed with your efforts to educate the public (as well as clinical practitioners) on advances in the scientific study of violence.

—§—

I would think that university sociology, counseling, and psychology departments would find interest in your wonderful website. If social service agencies were progressive, they would, too. Unfortunately, most counselors still "blame the parent" for their children's misdeeds.

—§—

As I read the research results, I remember that at one time in our history, epileptics were thought to be possessed, and were confined and mistreated based on that belief.

—§—

I am finishing up my M.A. in psychology and I accidentally came across Crime Times as I was doing research on children of addicts. I love your newsletter.... The subjects you cover are fantastic, interesting and very relevant in today's world.

—§—

"As a member of the (State) Supreme Court.....I have enjoyed receiving and reading your publication."

QUOTABLE

"Are some people born bad? A better way of putting it is that some people are born with characteristics that make them poor fits for most of the honest jobs available in most societies, and so far we haven't learned how to deal with them. We are at risk of becoming their victims but they are victims too—victims of the evolutionary history of our species.....Almost all the characteristics of the 'born criminal' would be, in slightly watered-down form, useful to a male in a hunter-gatherer society and useful to his group. His lack of fear, desire for excitement, and impulsiveness make him a formidable weapon against rival groups. His aggressiveness, strength, and lack of compassion enable him to dominate his groupmates and give him first shot at hunter-gatherer perks.

"Unlike the successful hunter-gatherer, however, the career criminal tends to be below average in intelligence. I take this to be a hopeful sign: it suggests that temperament can be overridden by reason. Those individuals born with the other characteristics on the list but who also have above average intelligence are evidently smart enough to figure out that crime does not pay and to find other ways of gratifying their desire for excitement."

Judith Rich Harris, in The Nurture Assumption—Why Children Turn Out the Way They Do, *1998*

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QUOTABLE "When we seek to understand the origins of disturbed behavior we must forget the idea that it makes psychological 'sense.' For it is this assumption that underlies all schools of psychotherapy, and it is this assumption that has proved fruitless both in helping us to understand abnormal behavior as well as fruitless in helping us to treat it."

—George Watson, Ph.D., in Nutrition and Your Mind

"We are at an exciting time when we no longer need to think about the brain as a collection of static anatomical regions, nor as a mere mass of generic cells and chemicals. We can now peek into the brain and see it shaping and reshaping every moment of our lives."

—From The Dana Guide to Brain Health, *edited by Floyd E. Bloom, M.D., M. Flint Beal, M.D., and David J. Kufer, M.D.*

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