

Biomedical update:

Eye movements abnormal in autism

Six of eleven autistic children tested in a recent study (Rosenhall et al.) had abnormal eye movements, possibly indicating brain damage.

The researchers studied the *saccades*—rapid eye movements that occur when the eye fixes on various points—of the autistic children and a control group of non-disabled children. They found that the saccades were inaccurate in six autistic children (indicating poor eye motor precision), and were slower than normal in four autistic children.

Eight of the autistic children tested had either abnormal saccades or abnormal results on another test, the auditory brainstem response (ABR) test, which also indicates brain dysfunction.

The researchers note that two of their subjects had both eye motor problems and ABR abnormalities, and conclude that their findings "suggest that a brainstem-cerebellar lesion might be present" in autism.

"Oculomotor findings in autistic children," U. Rosenhall, Elisabeth Johansson and Christopher Gillberg; *Journal of Laryngology and Otology*, Vol. 102, May 1988, pp. 435-439. Address: U. Rosenhall, Department of Audiology and Otolaryngology, Sahlgren's Hospital and The Department of Child and Youth Psychiatry, University of Goteborg, Sweden.

More evidence for two-factor theory

New research by Australian researchers Robert Barry and Angela James appears to support their "two-factor theory" of autism.

James and Barry tested 32 autistic children, as well as control groups of retarded and normal children, and say their findings support the hypothesis that autism involves both a specific brainstem defect and overall developmental delay. They found that:

- Autistic children required more time than control groups to become accustomed ("habituated") to repeated sights and sounds. The researchers measured breathing rates, pulse, and skin conductance—measurements which normally change as a person becomes accustomed to a recurring sound or sight—and found that the autistic children showed "little evidence of any response reduction" over repeated trials. Barry and James believe this abnormal response is due to a defect in the brainstem reticular activating system, a defect first postulated by Bernard Rimland in 1964. They cite other studies which have linked slow habituation to lack of emotional responsiveness.

- Autistic children are "hyper-responsive" to stimuli compared to matched-age controls. Also, while normal children's responses decrease in magnitude as they age, there is less change in the autistic children's responses as they grow older. The researchers conclude that this "suggests continuing developmental problems for these children: there is evidence not only of developmental delay, but also of a continuing slowness of development."

"Coding of stimulus parameters in autistic, retarded, and normal children: evidence for a two-factor theory of autism," Robert J. Barry and Angela L. James; *International Journal of Psychophysiology*, No. 6, 1988, pp. 139-149. Address: R. J. Barry, School of Education, University of New South Wales, Kensington 2033, Australia.

Ionization ineffective?

Placing children with autism or attention deficit disorder (ADD) in a negatively ionized environment did not significantly affect their behavior, attention, or task performance, according to a study by Yates et al.

Because exposure to negative ions lowers the level of the substance serotonin in the brains of animals, and many autistic and ADD children have high levels of serotonin, some researchers have theorized that these children might improve in a negatively ionized environment.

However, Yates et al. studied 21 children with ADD and seven autistic children and found that 20-minute periods of exposure to negative ionization "did not affect the activity level, impulsivity, reality orientation, destructive/constructive [level], attention, or task performance" of the children."

Yates' findings differ from those of a study by L. L. Morton and John R. Kershner, who tested 20 normal, eight learning-disabled and eight mildly mentally retarded children placed in negatively ionized classrooms. The researchers found that all three groups showed improved memory, and the learning-disabled children showed improvement in attending skills.

"Effects of negative air ionization on hyperactive and autistic children," Alayne Yates, Frank Gray, Larry E. Beutler, David E. Sherman, and Elizabeth M. Segerstrom; *American Journal of Physical Medicine*, Vol. 66, No. 5, October 1987, pp. 264-268. Address: Alayne Yates, Chief of Child Psychiatry, Arizona Health Sciences Center, Tucson, AZ 85724.

"Negative air ionization improves memory and attention in learning-disabled and mentally retarded children," L. L. Morton and John R. Kershner, *Journal of Abnormal Child Psychology*, Vol. 12, No. 2, 1984, pp. 353-366. Address not available.

Many Rett cases seen in rural Italian area

Rett syndrome affects only girls and causes, at various stages, autistic-like behavior, loss of purposeful use of the hands (replaced by a constant "hand-washing" or hand-wringing movement), seizures, eating and mobility problems, retardation, loss of acquired speech, and other symptoms.

Five girls with Rett syndrome recently were identified in a population survey of 2,269 young girls in a rural area in northern Italy, according to researchers Michele Zappella and Mario Cerioli. The researchers say they have no clues as to why this area has such a high number of Rett cases (expected prevalence is fewer than one case for every 10,000 girls), and note that they found no evidence of inbreeding or recurring congenital abnormalities among the families of the affected girls.

Zappella and Cerioli say that "it is unlikely that genetic factors alone may have caused this unexpected concentration of patients in a small area, nor can pure coincidence be a plausible explanation."

A separate Rett syndrome study by Alison Kerr et al. found that while girls with Rett syndrome generally seem to be developing well before regression sets in, there is strong evidence that "distinct abnormalities of movement and indications of cognitive impairment" are present long before obvious symptoms appear.

In four cases, Kerr et al. obtained films taken of the girls by their families before the children began to regress. Abnormalities were detectable at two months of age in one case, and were apparent in all of the girls by 11 months of age, although regression was not noted by the parents of the girls until after 15 months of age. Pre-regression abnormalities included poor muscle tone, coarse patting or waving motions, jerky movements, abnormal finger and arm movements, and clumsiness.

Kerr and colleagues studied the developmental histories of 20 additional girls with Rett Syndrome and found evidence of similar pre-regression abnormalities.

"High prevalence of Rett syndrome in a small area," Michele Zappella and Mario Cerioli; *Brain and Development*, Vol. 9, No. 5, 1987, pp. 479-480. Address: Michele Zappella, Department of Child Neurology and Psychiatry, via Mattioli 10, 53100 Siena, Italy.

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"The hands and the mind, pre- and post-regression, in Rett syndrome," Alison M. Kerr, Janette Montague, and J. B. P. Stephenson; *Brain and Development*, Nov. 1987. Address: Dr. A. M. Kerr, 29 Fountain Road, Bridge of Allan, Stirling FK9 4AT, Scotland.