

Biomedical update:

MRI: cerebral defects

Abnormalities of the cerebral cortex—the thin, intricately convoluted layer of tissue that covers the hemispheres of the brain—were present in seven of 13 high-functioning autistic men who underwent magnetic resonance imaging scans, according to Joseph Piven et al.

Five of the autistic individuals tested had *polymicrogyria* (numerous small, malformed convolutions of the cortex). One autistic subject had *schizencephaly* (abnormal symmetrical clefts in both hemispheres of the cortex), and also *macrogyria* (widening of a gyrus or "fold" in the cortex, associated with thickening of the underlying brain tissue). Another autistic individual exhibited macrogyria alone. None of the control subjects, matched for age and IQ, showed any of these defects.

The defects they found, the researchers say, result from abnormal migration of brain cells to the cerebral cortex during the first six months of gestation. They note that the brain defects found by Eric Courchesne and Margaret Bauman and Thomas Kemper (see previous ARRIs) also appear to be caused by abnormal cell migration during the first six months of prenatal development.

Cortical malformations seen in this study were not limited to one brain lobe, and appeared at the same rate in both hemispheres of the cerebrum. This suggests, Piven et al. say, that "it is unlikely that they have a direct role" in causing autism; rather, by changing the reorganization and connections of the cerebral cortex, they may affect other brain areas, causing autistic symptoms.

"Magnetic resonance imaging evidence for a defect of cerebral cortical development in autism," Joseph Piven, Marcelo Berthier, Sergio Starkstein, Eileen Nehme, Godfrey Pearlson, and Susan Folstein; *American Journal of Psychiatry*, 147:6, June 1990, pp. 734-739. Address: Joseph Piven, Dept. of Psychiatry, 2-181 Meyer Bldg., Johns Hopkins Hospital, 600 N. Wolfe St., Baltimore, MD 21205.

Asperger's: more common than thought?

As many as 26 of every 10,000 non-retarded children may have Asperger's syndrome, according to a population study by I. Carina and Christopher Gillberg. The researchers also found that Asperger's only rarely occurs in conjunction with retardation.

The criteria the researchers used to define Asperger's—considered by many researchers to be a mild form of autism—included severe impairment in reciprocal social interaction (including inability to interact normally with peers, lack of desire for contact with peers, and socially inappropriate behavior); an all-absorbing, cir-

cumscribed interest in one topic involving rote memory (such as astronomy); insistence upon stereotyped routines; speech and language problems including delayed language development, superficially fluent speech that is pedantic and unnatural, and impaired comprehension combined with good expressive language; limited or clumsy gesturing and inappropriate facial expression; and physical clumsiness.

"Asperger syndrome—some epidemiological considerations: a research note," I. Carina Gillberg and Christopher Gillberg; *Journal of Child Psychology and Psychiatry*, Vol. 30, No. 4, 1989, pp. 631-638. Address: C. Gillberg, Department of Child and Adolescent Psychiatry, Child Neuropsychiatry Centre, Box 17113, S-402 61, Goteborg, Sweden.

Asperger's, acrocyanosis may be linked

Acrocyanosis is an uncommon condition causing mottled blue or red skin discoloration on hands, feet, wrists, and ankles; profuse sweating; and cold fingers and toes. Ninety percent of cases of acrocyanosis occur in females.

Because acrocyanosis occurs so rarely, especially in men, P.K. Carpenter and D. Morris were surprised to discover three males with Asperger's syndrome—generally considered a mild form of autism—who also had acrocyanosis. (They have seen a fourth man who also appears to have both disorders, but have not completed testing to verify both diagnoses.)

"The local occurrence of three examples of this association suggests an increased incidence [of acrocyanosis] in people with Asperger's syndrome," the researchers say. This could be explained, they speculate, by the elevated levels of the brain chemical serotonin which are found in many autistic individuals.

"Serotonin is known to cause vasoconstriction [constriction of blood vessels]," they note, "and to produce a stagnation of blood flow in the skin . . . It reduces blood flow in the hand and therefore produces the dusky skin hue of stagnated blood."

The researchers would like to hear from anyone with information on other cases of Asperger's and acrocyanosis occurring together.

"Association of acrocyanosis with Asperger's syndrome," P. K. Carpenter and D. Morris; *Journal of Mental Deficiency Research*, 1990, 34, pp. 87-90. Address: P. K. Carpenter, Senior Registrar, Hortham Hospital, Hortham Lane, Almondsbury, Bristol BS12 4JN, England.

Recognizing emotions: how do people with autism process social cues?

While studying autistic adults' ability to recognize emotional and social cues in speech, Hope Macdonald et al. used both natural and electronically filtered voices—and, in the process, made an interesting discovery.

Nondisabled individuals in their study could readily identify happiness, anger, fear and sadness in the voice of a speaker. But when the voice was electronically altered, making the words unintelligible, it was harder for listeners to identify emotional cues. Autistic participants, however—while they scored lower on categorizing both natural and filtered voices—found it as easy to identify emotions in the electronically filtered voices as in natural voices.

This may be evidence, they say, that "autistic subjects may use a different strategy than [nondisabled individuals] for dealing with such communications, e.g. they may have a tendency to treat them more as 'pure' than as 'social' stimuli. Although such a strategy would be less adequate for dealing with familiar social stimuli, when applied to unusual stimuli, like filtered speech, it might be relatively efficient."

Evidence of "persisting socio-emotional deficit"

They also found that non-retarded autistic adults are less able than control subjects to make their own faces express recognizable emotions. In addition, when autistic and non-disabled individuals were asked to portray various emotions through their own voices—for instance, to sound happy or angry—listeners frequently incorrectly interpreted autistic subjects' voices as sad.

"That the voices of autistic subjects were more often perceived as sounding sad is in keeping with clinical observations that autistic subjects tend to speak with a monotonous vocal intonation," they say.

The researchers conclude that autistic individuals' difficulty in recognizing and expressing emotion is "not simply a developmental lag, but a facet of a persisting socio-emotional deficit that is relatively independent of chronological and mental age."

"Recognition and expression of emotional cues by autistic and normal adults," Hope Macdonald, Michael Rutter, Patricia Howlin, Patricia Rios, Ann Le Conteur, Christopher Evered and Susan Folstein; *Journal of Child Psychology and Psychiatry*, Vol. 30, No. 6, pp. 865-877, 1989. Address: Dr. Hope Macdonald, Department of Child and Adolescent Psychiatry, Institute of Psychiatry, De Crespigny Park, Denmark Hill, London SE5 8AF, United Kingdom.