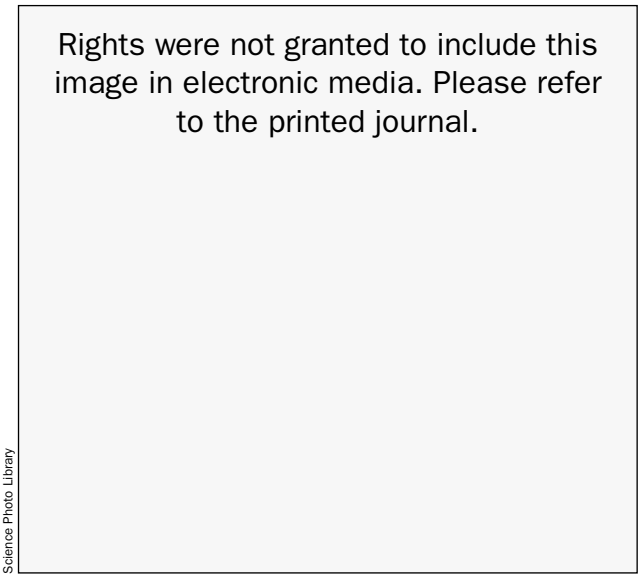
Scientists discover link between brain growth and autism

The cause of autism has eluded researchers ever since the disorder was first described in 1943. A variety of possibilities, ranging from vaccines to toxins to infections, have been suggested. But hints may lie in one of the earliest observations of autistic children: some have relatively large heads. A team of US researchers set out to determine whether excessive brain growth preceded onset of clinical signs of autism.

The researchers compared time series data of head circumference measurements in children subsequently diagnosed with autism spectrum disorder to Centers for Disease Control and Prevention growth charts in the USA and to longitudinal data from a study of healthy infants. They found that, at birth, children later diagnosed with autism had lower head circumference measurements, but by the time those children reached age 2 or 3 years, their head circumference was greater than that of healthy children (*JAMA* 2003; **290:** 337–44). MRI analysis revealed other abnormalities in brain development.

"This the first study to discover brain growth abnormality in first year of life in autism", said Eric Courchesne (University of California, San Diego, and Children's Hospital Research Center, San Diego, CA, USA), who led the study. "Furthermore, those with the most abnormally large head circumference by the end of the first year had the most abnormal overgrowth of several important brain structures including the cerebral cortex, a structure important in basic as well as higher functions such as social cognition, language, memory, and attention".

"Because of the small sample sizes in this study, the findings by themselves could only be considered preliminary", said Janet Lainhart (University of Utah School of Medicine, Salt Lake City, UT, USA), who wrote an accompanying editorial (*JAMA* 2003; **290:** 393–94). "However, when the findings of this study are combined with the findings of previous studies, the combined results strongly suggest that rates of head and brain growth are increased during very early childhood in a sizeable proportion of children later diagnosed with autism."



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Increased rate of head growth could enable earlier diagnosis

The findings, if supported by future work, have tremendous application for early detection of autism.

"All current assessment instruments are behaviour-driven and are applicable around ages 2–3 years, when any social-communicative deficits become more apparent against a background of typical developmental milestones", said Andy Shih (National Alliance for Autism Research, Princeton, NJ, USA). "If confirmed, increased rate of head growth in the first year of life could be an anatomical criterion . . . that enables earlier diagnosis, and thus better prognosis".

David Lawrence

Suicide rates in Russia on the increase

Figures confirming Russian suicide levels are among the world's highest were reported last week, putting a tragically human face on Russian economic decline since the Soviet collapse in 1990. Russia registered 39·7 suicides per 100 000 people in 2001, claiming 57 000 lives, according to a report released in collaboration with WHO by the Russian Ministry of Health's Research Institute of Psychiatry.

The 2001 figures represent a slight decline from a peak in 1994 of 42·1 suicides per 100 000, when the Russian economy was rapidly shrinking, and a slight increase over the 1998 figure of 35·4, when the economy was rapidly growing. Russian men are now six times more likely to commit suicide than women, and the highest risk group among men is 45–54 year olds, with 106·7 suicides per 100 000, according to study author Dmitry Veltischev. Russian women are most likely to kill themselves after the age of 75, with 27·4 cases per 100 000 reported.

The new figures represent a dramatic increase in Russian suicide rates since 1990, the last year of Soviet government in Russia, when the suicide rate was reported to be 26·4 per 100 000 people.

A 2002 WHO study found that suicide was the largest cause of preventable death worldwide, with annual suicide deaths matching combined figures from war and homicide. While Russia's rate is well below Lithuania's—which at 51 per 100 000 is the world's highest—it is greater than Western Europe's average of five suicides per 100 000, and North America's average of 4·1. Alexander Butchart, WHO coordinator for violence prevention says "there was a dramatic increase in Russian suicide rates starting in the mid-1980s through to the mid 1990s, then a brief decline before it began growing again after 2000. The reasons are complex but the suicide rate is obviously linked to social and economic disintegration."

Recent research suggests Russian suicide rates stem from more than just economic issues, though. In a 2000 study of international suicide prevention methods, two researchers from the Keromovo district of Siberia noted a massive increase in gun ownership. According to Natalia Kokorina and Andrew Lopatin of the Kemerovo State Medical Academy, attempted suicide by firearms in their region increased 30% between 1997 and 2000.

Paul Webster