

Autism Research Review

I N T E R N A T I O N A L

A quarterly publication of the Institute for Child Behavior Research

Reviewing biomedical and educational research in the field of autism and related disorders

Link between autism, genes is explored

"What are my chances of having another autistic child?"

"Do my non-disabled children need to worry about having autistic children?"

These are important questions to parents of autistic children — and difficult questions for professionals to answer. However, scientific studies, while not conclusive, are shedding light on the role genetics plays. In addition, there are now tests which can tell some families if they are at substantial risk for having another autistic child.

Does autism run in families?

Reviewing genetics studies, Susan Smalley et al. reported in the *Archives of General Psychiatry* that autism occurs in siblings of

autistic children approximately 2.7% of the time. (The Smalley review covered essentially the last 10 years. Her 2.7% figure is very close to the 2% figure, based on data collected much earlier, cited by Rimland, 1971, and Coleman and Rimland, 1976.)

While this number is fairly low—encouraging news for parents—Smalley points out that "this sibling frequency represents a 60- to 100-fold increase compared with population prevalence rates," indicating a family link. Although nearly all studies report a sibling frequency of between 2% and 3%, Ritvo et al. have reported a 4.4% sibling risk, possibly due to different sampling techniques.

Twin studies, Smalley notes, indicate that genetics play a "substantial" role in autism.

She notes that when one identical ("monozygotic") twin is autistic, the other

The risk of recurrence is very small in non-Fragile X families, but twin studies indicate that genes DO play a role in autism.

twin (who shares 100% of his twin's genes) is autistic 64% of the time. For non-identical ("dizygotic") twins, who generally have

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How many autistic children?

Just how common is autism? Four recent reports offer very different answers to that question.

Canadian study: 10 per 10,000

Canadian researchers (Susan E. Bryson et al., 1988) found 21 autistic children in a population of 20,800 children—a ratio of ten autistic children per 10,000. This is double the commonly accepted number of 4.5 in 10,000, and the researchers say that even their high figure "must be a conservative estimate" because it is difficult to identify the more subtle cases of autism.

The male-to-female ratio of autistic children in their study was 2.5:1; as in most studies, females were more severely retarded than males. Overall, seventy-five percent of the autistic children were retarded.

Utah study: 4 per 10,000

In a 1989 study, Edward Ritvo et al. uncovered 241 cases of autism in the entire population (about 1.5 million people) of Utah, a prevalence of 4 in 10,000.

In this study, the male-to-female ratio was 3.7:1 and 66 percent of the autistic subjects had IQs of 70 or below. Again, females were more retarded than males. Of the families with autistic children, 9.7% had more than one autistic child.

Three of the children the researchers diagnosed as autistic also had Down's syndrome, two Sanfilippo syndrome, two were diagnosed as Fragile X, two had Tourette's syndrome, and four had Rett syndrome.

The Utah findings correlate closely with a 1984 Irish study by McCarthy et al., which reported a prevalence rate of 4.3 per 10,000.

Japanese studies: 13 - 16 per 10,000

In a 1989 study in Nagoya, Japan, researchers Toshiro Sugiyama and Tokuchiro Abe found 16 cases of autism among 12,263 children, for a ratio of 13 per 10,000. They found an additional four cases which were later confirmed to be autistic; if these cases are included, the prevalence of autism is 16 in 10,000.

The researchers note that in a study in Toyota, Japan in 1983 (Ishii and Takahashi), the rate was 16 per 10,000. A 1987 study in Kurume, Japan, also found a high rate of 15.5 cases per 10,000. Noting that earlier Japanese studies had reported much lower rates of autism, the Kurume researchers speculate that autism may be on the increase because modern medical technology is keeping more neurologically damaged babies alive.

German study: 2 per 10,000

H. C. Steinhausen et al., of West Germany, reported in 1986 that the prevalence of autism in West Berlin is 1.9 cases per 10,000. The male-to-female ratio in this study was more than two to one, and there was no evidence that the autistic children had more prenatal or perinatal risk factors than the non-autistic children in the area.

The German researchers noted that their 2-in-10,000 prevalence rate is the same as that found in a 1984 population study conducted in Gotenburg, Sweden, by Christopher Gillberg.

Based on averages from more than a dozen studies since 1970, the 4.5 per 10,000 figure is used by most researchers to estimate the prevalence of autism. Using that figure, the number of autistic people in the United States—which had a population of 246.9 million people in 1988—is approximately 111,000.

Editor's Note: Almost certainly the large discrepancies found are the result of differences in criteria for diagnosing autism, rather than being true differences in prevalence.

List of references available; send SASE.