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# Is Autism More Common Now Than Ten Years Ago?

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A total population study of children, aged 13 years and under, suggested that there has been an apparent rise in the frequency of autistic disorder and autistic-like conditions (excluding Asperger's syndrome) in one area of western Sweden over the last ten years. The frequency was 4.0/100 000 in 1980, 7.5/10 000 in 1984 and 11.6/10 000 in 1988 in the city of Göteborg. Even though the prevalence rates refer to slightly different age cohorts, it was concluded that the apparent increase is in part due to better detection, but also to new cases born to immigrant parents. Typical cases of autistic disorder accounted for 75% of cases, and 20% had normal or near-normal IQs.

According to a handful of recent studies of the epidemiology of autism (Bohman *et al*, 1983; Steffenburg & Gillberg,1986; Bryson *et al*, 1988; Burd & Kerbeshian, 1988; Tanoue *et al*, 1988), its prevalence may be higher than previously documented (Lotter, 1966; Wing & Gould, 1979; Gillberg, 1984). Whether this possible increase in prevalence rate is due to better screening measures and better diagnostic criteria or whether it represents a rise in the frequency of autism over the last ten years remains open to speculation. Also, the possibility that a broader – perhaps overinclusive – concept of autism may have emerged needs to be considered.

We now have data from three different population-based studies of autism performed at three different points in time in the same area of Sweden. Results from two of the studies have been published previously (Gillberg, 1984; Steffenburg & Gillberg, 1986); some of the data from the third are reported in this paper.

## Method

### The first two studies

In Göteborg and its neighbouring rural area (the county of Bohuslän) we screened the population for autism and autistic-like conditions in 1978 and 1980 (Gillberg, 1980, 1984) and again in 1984 (Steffenburg & Gillberg, 1986). The studies were similar in outline: information about autism and autistic-like conditions was given to relevant referral sources, and questionnaires were administered to all paediatricians, child psychiatrists, doctors working in the institutions for the mentally retarded, audiology departments, school health authorities, and well-baby clinics in a circumscribed area. All schools, including special schools for autistic, mentally retarded, maladjusted, blind, and deaf children are regularly surveyed by paediatricians, child psychiatrists, ophthalmologists or audiologists, which means that the screening by questionnaire was not limited to children referred to clinics. Not only doctors but also clinical psychologists working in the region were reached by the screening procedure as they were all working in close collaboration with the doctors we contacted. All persons known to be involved with services for psychotic children (doctors, psychologists, teachers, social workers, physiotherapists, etc.) were contacted personally by us and interviewed in accordance with the questionnaire. The local autistic society gave information and the registers of the child-psychiatric and child-guidance clinics, paediatric clinics, and services for the mentally retarded were searched in order to identify cases of autism, childhood psychosis, childhood schizophrenia and mental retardation with autistic traits. All children reported were either dismissed as non-suspect after we had conducted a thorough interview with the reporting doctor, psychologist or teacher, or were personally assessed by CG.

The study performed in 1980 yielded a total prevalence for infantile autism and other childhood psychosis of 4.0/10 000 children. This study reported findings only from the urban industrial area of Göteborg.

The study performed in 1984 yielded a considerably higher prevalence for infantile autism and autistic-like conditions combined (autistic-like conditions roughly similar to "other childhood psychosis" in the previous study) of 6.6/10 000. This study reported findings from both the urban area of Göteborg and the rural area of the adjacent county of Bohuslän. The combined prevalence for infantile autism and autistic-like conditions was 7.5/10 000 in Göteborg and 5.6/10 000 in the rural area.

In the 1980 study, classic cases of infantile autism were reported to constitute almost exactly half the total prevalence for infantile autism and other childhood psychoses. In the 1984 study, infantile autism accounted for two-thirds of the cases. Boys by far outnumbered girls in both studies, but this was accounted for by infantile autism alone. The preponderance of boys with autism was less pronounced among severe mentally retarded children. Severe mental retardation was more common among the group of children in the 1984 study as compared with the 1980 study.

Gillberg *et al* (1987) reported that, in the urban area, there was an over-representation of typically autistic children of immigrant parents from areas outside northern Europe.

**Present study (the third study)**

The new study represents an attempt to update the results from the 1984 study. We again screened Göteborg and the county of Bohuslän in order to trace new cases, not reported in the 1984 study. The reason for doing this was our clinical impression in our state-wide diagnostic centre for autistic disorder (AD) and autistic-like conditions (AC) that the prevalence now (in 1988) appeared to be higher than described in our 1984 paper among the age-specific population (children born 1975–84) reported in that paper. Further, the fact that the 1984 study included children born in 1981–84 made it possible – or indeed quite likely – that a number of very young autistic children might have been missed because of the well known difficulties of diagnosing autism in infancy and very early childhood. Finally, we had been struck by a clinical impression that at least from the urban area of Göteborg a very substantial proportion of new cases of autism came from immigrant families. In the new study we wanted to check systematically whether this was indeed the case.

Between the second and third study, a psychologist and the senior author had lectured repeatedly to all nurses in well-baby clinics in the region on autism generally and early symptoms in particular. They showed videotapes of 2–5-year-old children with autism.

The new study is an extension of the second study. At the end of 1988, we searched all registers and contacted all persons (doctors, psychologists, teachers, social workers, speech therapists, and parents) who had reported children with AD or AC or similar disorders to us in 1984, at the end of 1988. Our objective was to find all children with autism born in 1975–84 living in Göteborg and Bohuslän at the end of 1988 who had not been detected by our screening three years earlier. The most comprehensive register was the state-wide facility for diagnosing autism (at the Child Neuropsychiatric Centre) run by ourselves. At this centre, children from all over Sweden are evaluated under the suspicion that they might be suffering from AD or AC. Child health personnel and parents are encouraged to apply for diagnostic help at this centre. We also screened or searched the registers of the paediatric clinics, the child psychiatric clinic (all children aged under 14 years), the departments of medical genetics, speech therapy and audiology, and the services for the mentally retarded. All cases retrieved in this way were seen by the senior author. We rang or wrote to all those reporting cases to us in the previous study and asked them if, since that study, they had encountered any new children born in 1975–84 with autistic-type behaviour. All cases reported through these sources were known to us or recently referred for evaluation at our centre. These latter children were meticulously neuropsychiatrically examined by CG. Finally, all persons known to us to be specialising or particularly interested in autism (certain teachers, doctors, parents, and psychologists) were asked to report all children with autistic-type behaviour born in 1975–84 living in Göteborg in December 1988. Three children not previously known to us were brought to our attention, but two of these did not qualify for a diagnosis of AD or AC.

All children known by CG personally to suffer from AD or AC had previously been thoroughly examined by him. All children not reported in the 1984 study were now similarly meticulously examined by CG in order to arrive at a definite diagnosis. All the children in the study were also seen by at least one other independent child psychiatrist. There was 100% agreement with respect to the diagnosis of AD. This degree of reliability has also recently been reported in a blind inter-rater study of case records prepared on the basis of the information, elicited by the senior author, of children with autism, other psychiatric disorders and normal children (Steffenburg *et al*, 1989). The diagnoses made by the senior author were used in the present study.

All the children in the present study have been tested with the Griffiths' Developmental Scale for Children (Griffiths, 1970), or the Vineland's Social Maturity Scale (Magne & Wahlberg, 1961), or the Wechsler Intelligence Scale for Children (Revised) (WISC–R) or (in three cases) have been judged to be so profoundly mentally retarded as to be considered untestable. The Autism Behavior Checklist (Krug *et al*, 1980) was completed by CG during the interview with the parent in all cases. A newly developed interview schedule focusing on early symptoms of autism (Dahlgren & Gillberg, 1989) was used to elicit relevant information in all cases seen after 1 January 1986. The interview schedules were never used as the single source of information for making a diagnosis.

Almost all the children in the present study underwent in-depth neurobiological examinations, including chromosomal cultures, computerised tomography scans, auditory brain-stem response examination, electroencephalography, analyses of cerebrospinal fluid, blood analyses, urine analyses, and examinations by ophthalmologists and audiologists.

**Population studied**

All children born during the years 1975–84 and living in the city of Göteborg on 31 December 1988 constituted the urban target population. The total number of children in this population was 40 679 (20 895 boys, 19 784 girls).

All children born in 1975–84 and living in the county of Bohuslän on 31 December 1988 constituted the rural target population. The total number of this population was 37 427 (18 991 boys, 18 436 girls).

**Definitions of autistic disorder and autistic-like conditions**

In the 1980 study (Gillberg, 1984) and the 1984 study (Steffenburg & Gillberg, 1986), the term 'infantile autism' (IA) was used throughout. Children diagnosed as suffering from infantile autism all fulfilled the criteria of DSM–III (American Psychiatric Association, 1980), Rutter (1978), and Coleman & Gillberg (1985). In this new study, the term 'autistic disorder' (AD) is used instead.

The children in the previous studies who fulfilled criteria for IA also fulfilled criteria for AD according to DSM–III–R (American Psychiatric Association, 1987). All the new cases in this study, except two, fulfilled Rutter's (1978) criteria for IA. The two who did not, did not have a clearly documented onset of the disorder until after 30 months.

Autistic disorder (AD) was thus diagnosed in cases fulfilling at least 8 out of 16 possible symptoms in the domains of (a) social relatedness, (b) communication, and (c) behaviour. All cases in the present study had at least two symptoms from each domain, and the minimum number of symptoms shown by any one child in the series was ten. All the children, except two, diagnosed in this study as suffering from AD also fulfilled the criteria of DSM-III-R, Rutter (1978), and Coleman & Gillberg (1985), for infantile autism, which means that they had all had an onset of the disorder before 30 months of age.

Autistic-like conditions (AC) were defined as conditions similar to AD in respect of symptoms but showing some highly atypical traits (such as extremely clinging behaviour and confusion), or a relatively long period (up to four years in one case) of allegedly normal development. These autistic-like conditions have been referred to as "other childhood psychosis" in previous publications. Some of these cases fit the clinical picture of "disintegrative psychosis" (Evans Jones & Rosenbloom, 1978) or "childhood disintegrative disorder" (draft version of ICD-10; World Health Organization, 1989).

### Statistics

Chi-square tests (with Yates' correction wherever appropriate) were used in the statistical analyses of the results.

## Results

### Numbers and rate in Göteborg

There were 34 children (27 boys, 7 girls) with AD in Göteborg (Table 1). Six of these were aged 11–13 years, 16 were aged 8–10 years, and 12 were aged 4–7 years. Three of the children had moved to Göteborg after the 1984 screening and one child included in the previous screening had moved from the region. Compared with the 1984 screening there were 14 new cases identified, eight of whom had one or two immigrant parents. Nine of these 14 children belonged in the youngest age group, born in 1981–84, that is, they were all under four years old (and indeed in most cases under two years) at the time of the 1984 screening.

Only one further case of AC was traced in the new study. Thus, altogether 13 children (6 boys, 7 girls) were diagnosed as suffering from AC in the city of Göteborg.

Altogether 11.6/10 000 of all children in Göteborg suffered from AD or AC. Autistic disorder was considerably more common than AC, constituting 72% of the cases.

### Numbers and rate in Bohuslän

There were 21 children (17 boys, 4 girls) with AD in Bohuslän. Of these, 12 were aged 11–13 years, three 8–10 years, and six (one girl) 4–7 years. Only one child in this group had moved to the region after the 1984 screening. Another child had moved from the region after 1984. Compared with the previous screening there were six new cases with AD in the new screening. Only one child in Bohuslän had an immigrant parent. He lived on the extreme outskirts of Göteborg but administratively belonged to Bohuslän.

As in the urban area, only one further child with an AC was detected in the new study. This means that altogether six children (4 boys, 2 girls) with AC were found in the county of Bohuslän.

The prevalence for AD and AC combined in the rural county was 7.2/10 000. Here too AD accounted for the majority of the cases (78% of the whole group).

### Comment on the group aged under four years

In our previous study on essentially the same birth cohort, we reported on the prevalence for autism/autistic-like condition in the 0–3-year age range. A number of very young cases was reported in this new study, but they were not included – see under 'Discussion'.

### Intelligence

Forty of the 74 AD and AC children were severely mentally retarded, 19 of whom had an IQ in the 40–50 range while most of the remainder had developmental or social quotients below 30. Thirteen of the children were of normal

Table 1

Number of cases of autistic disorder (AD) or autistic-like conditions (AC) and prevalence rates in Göteborg (urban) and Bohuslän (rural) at the end of 1988 (figures in parenthesis refer to number of cases born to immigrant parents)

| Year of birth | AD | | AC | | Total (AD + AC) | | |
|---|---|---|---|---|---|---|---|
| | Göteborg | Bohuslän | Göteborg | Bohuslän | boys | girls | all |
| 1975–77 | | | | | | | |
| no. | 6 (4) | 12 (0) | 6 (4) | 2 (0) | 21 (7) | 5 (1) | 26 (8) |
| rate per 10 000 | 4.4 | 9.6 | 4.4 | 1.6 | | | 10 |
| 1978–80 | | | | | | | |
| no. | 16 (4) | 3 (0) | 6 (1) | 1 (0) | 18 (4) | 8 (1) | 26 (5) |
| rate per 10 000 | 12.8 | 2.6 | 4.8 | 0.9 | | | 10.8 |
| 1981–84 | | | | | | | |
| no. | 12 (6) | 6 (1) | 1 (0) | 3 (0) | 16 (6) | 6 (1) | 22 (7) |
| rate per 10 000 | 8.1 | 4.4 | 0.7 | 2.2 | | | 7.8 |
| Total no. | 34 (14) | 21 (1) | 13 (5) | 6 (0) | 55 (17) | 19 (3) | 74 (20) |
| Total prevalence rate per 10 000 | 8.4 | 5.6 | 3.2 | 1.6 | - | - | 9.5 |
| Boy:girl ratio[1] | 3.7:1 | 4.7:1 | 0.8:1 | 11.9:1 | - | - | 2.8:1 |

1. Population-based ratio, adjusted to allow for boy:girl ratio in the general population.

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Table 2
Intellectual levels of boys and girls with autistic disorder (AD) and autistic-like conditions (AC): urban and rural areas combined

| Intellectual level | AD | | AC | | AD + AC | |
|---|---|---|---|---|---|---|
| | *n* (%) | boys:girls | *n* (%) | boys:girls | *n* (%) | boys:girls |
| IQ < 50 | 30 (55%) | 22:8 | 10 (53%) | 4:6 | 40 (54%) | 26:14 |
| IQ 50–70 | 14 (25%) | 13:1 | 7 (37%) | 6:1 | 21 (28%) | 19:2 |
| IQ > 70 | 11 (20%) | 9:2 | 2 (11%) | 0:2 | 13 (18%) | 9:4 |
| Total | 55 (100%) | 44:11 | 19 (100%) | 10:9 | 74 (100%) | 54:20 |

or near normal intelligence (Table 2). Four of the AD and none of the AC children had a tested IQ exceeding 100.

### Boy:girl ratios

In the group of children with AD, the boy:girl ratio was 3.8:1 after adjustment for the boy:girl ratio in the general population had been made. In the group with the autistic-like conditions the corresponding ratio was 1.1:1. Among the severely mentally retarded children (IQ < 50) the boy:girl ratios were much lower than among those with milder degrees of retardation. This tendency was particularly clear in those with AD, but the dividing line did not seem to be between mild mental retardation and normal intelligence but rather between severe mental retardation and mild mental retardation.

### Associated handicaps

Twenty-seven of the 55 children with AD and nine of the 19 with AC had obvious clinical organic signs (other than mental retardation) indicative of nervous-system dysfunction. A vast majority of the children in both groups had radiological, physiological, chromosomal, or chemical indications of nervous system damage or dysfunction.

Table 3
Obvious clinical organic signs of handicap associated with autistic disorder (AD) and autistic-like conditions (AC): urban and rural areas combined

| Clinical sign | AD (*n* = 55) | AC (*n* = 19) |
|---|---|---|
| Epilepsy | 9 (16%) | 8 (42%) |
| Moebius syndrome | 3 (5%) | |
| Martin-Bell syndrome[1] | 6 (11%) | |
| Other major chromosomal abnormalities | 3 (5%) | |
| Tuberous sclerosis | 1 (3%) | |
| Laurence-Moon-Biedl syndrome | 1 (3%) | |
| Hydrocephalus | 1 (3%) | |
| Neurofibromatosis | 1 (3%) | |
| Williams' syndrome | 1 (3%) | |
| Hearing deficits | 2 (4%) | 1 (6%) |
| Cerebral palsy | | 1 (6%) |
| Total number of children | 27 (49%) | 9 (47%) |

1. Several more children had other chromosomal abnormalities.

Seventeen (23%) of the children had developed epilepsy. This was much more common in the group with AC, as only 16% of the group with AD had epilepsy. Almost two-thirds of the children with seizures were girls. Four of these 17 children had had an onset of seizures before 12 months.

A number of cases had other diagnoses, some of which are known to be associated with autism (Table 3).

### Social class

There was no significant social-class bias (class assessed according to father's occupation, and using 1986 census data from the Swedish Central Bureau of Statistics) in either the AD or the AC group as contrasted with a randomly selected group of normal seven-year-olds (Gillberg & Schaumann, 1982).

Table 4
Immigrant parents and autism

| | No. of children |
|---|---|
| AD in urban area | 34 |
| AD in urban area with immigrant parents | 14 |
| only mother immigrant status | 3 |
| only father immigrant status | 3 |
| both parents immigrant status | 8 |
| child born in Sweden | 5 |
| parents' country of origin | |
| Nordic countries | 1 |
| Central Europe | 4 |
| England | 1 |
| Southern Europe | 2 |
| Asia | 3 |
| Africa | 1 |
| South America | 2 |
| AD in rural area | 21 |
| AD in rural area with immigrant parents | 1 |
| AC in urban area | 13 |
| AC in urban area with immigrant parents | 5 |
| only father immigrant status | 4 |
| adopted from Vietnam | 1 |
| parents' country of origin | |
| Nordic countries | 1 |
| Central Europe | 2 |
| Asia | 1 |
| Africa | 1 |

There were no children with AC with immigrant parents in the rural area.

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**Immigrant parents**

Fourteen of the 34 children with AD from the urban area had immigrant parents. Only in one of these families did the parents come from one of the Nordic countries. The majority came from southern Europe, Asia, Africa, or South American (Table 4). Only one child with AD from the rural area had an immigrant parent and this child actually lived on the outskirts of Göteborg. A majority of the children with AD who had immigrant parents had not been born in Sweden.

A similar proportion of urban children with AC had immigrant parents (5 in 13).

## Discussion

The three population prevalence rates are not directly comparable. The studies were all performed in the same city by the same research team in a limited period, but the prevalence rates refer to slightly different age cohorts. Thus, the second and third studies focused on essentially the same birth cohort of children, but the 0–3-year-olds were included in the second only, and the 10–13-year-olds in the third only. Autism and autistic-like conditions usually begin in the 0–3 year age range, but can be difficult to diagnose early on. This was demonstrated by the fact that, in the second study, the prevalence rate reported was lowest for this age group. Also, a number of cases suspected of suffering from autism when under the age of three years will be shown to have other diagnoses as they get to be four or five years of age (Gillberg *et al*, 1990). We therefore decided that the prevalence rate for the very young age group was uncertain and decided not to report on it in the third study. However, a number of very young cases (under age four years) were known to us.

If one compares the prevalence rates for AD and AC combined (those who were 4–9 years of age at the time of the second study and those who were 4–9 years of age at the time of the third study) the relative difference in prevalence rates between the third and the second study is even higher (15.6 v. 10.7 per 10 000) than if one compares the total prevalence rates in Table 1 of this report with the total prevalence rates in the second study (11.6 v. 7.5 per 10 000).

Taken at face value, these data would imply that the prevalence rate of autism in the Göteborg area has increased over the last ten years and that it continues to increase. However, judging from our analyses, the increase consists of two parts, one real and one artefactual.

The first study performed in 1980 yielded a total of 4.0/10 000 children with AD and AC in the Göteborg area. The 1984 study showed a prevalence of 7.5/10 000 and the new 1988 study 11.6/10 000 children. This higher prevalence is probably due in part to much better detection of cases in the two later as compared with the earlier study. Also, the latest prevalence figure is very close to that recently obtained by Bryson *et al* (1988) in Canada. After the 1984 study was completed, the new statewide Autism Diagnostic Centre opened in Göteborg. Screening studies of autism have now been performed on several occasions in the Göteborg area over the last ten years. It is quite likely that this has increased professional sensibility to autism, particularly within the institutions and schools for the mentally retarded since so much of the increased prevalence is accounted for by severely mentally retarded children.

In the 1984 study, the prevalence of autism and similar conditions among the mildly retarded and children of normal intelligence was almost exactly the same as that of the 1988 study. However, in the new study both the relative and absolute numbers of normally (or near normally) intelligent children with autism have increased. In this context it is worth noting that children with typical Asperger's syndrome were not included in the new study. Separate epidemiological studies on Asperger's syndrome are now in progress in Göteborg (Gillberg & Gillberg, 1990). Even though we have set ourselves specific diagnostic criteria for Asperger's syndrome that are slightly different from those of autism, it will be obvious to anyone at all familiar with symptoms in this field that clear dividing lines between autism and Asperger's syndrome do not exist, at least not between high-functioning autism and low-functioning Asperger's syndrome. We already have data to show that had we included Asperger's syndrome, the prevalence for autism with normal intelligence would have been several times higher than that presented here.

If one concludes that to some extent the increased prevalence (Table 5) is due to increasing awareness of autism in the Göteborg region, one must acknowledge that there is a true increase in the prevalence of AD and AC in the urban Göteborg area which is accounted for by autistic children born to immigrant parents. Almost 60% of all new children

Table 5
Changes in prevalence of AD and AC from 1980 to 1988

| | Prevalence per 10 000 children | | |
|---|---|---|---|
| | 1980 | 1984 | 1988 |
| AD urban | 2.0 | 4.7 | 8.4 |
| AD rural | 2.0 | 4.2 | 5.6 |
| AC urban | 1.9 | 2.8 | 3.2 |
| AC rural | 1.1 | 1.4 | 1.6 |

with autism in the urban region detected between 1984 and 1988 were born to immigrant parents. Almost all of these parents had been born in non-neighbouring countries and more than half came from southern Europe, Asia, Africa, and South America. So far, this represents an unusual distribution of immigrants as compared with the Göteborg population in general, in which the majority of the immigrant parents have been born in Finland (Gillberg *et al*, 1987). Only about a third of the autistic children born to immigrant parents have been born in Sweden. One in five of the immigrant children had Swedish-born mothers.

There could be several reasons for an increased prevalence of autism in children born to 'exotic' immigrant parents. First of all, the possibility of genetic disorders exclusive to the native region of the parents (including consanguinity) must be appreciated. Secondly, pre-natal or perinatal brain damage is likely to be more common in less developed countries. Finally, intrauterine viral infections (e.g. rubella) might be more common among children born to mothers who do not have viral antibodies and who contract infections after immigration. Another possibility might have been that parents of children with autism moved to Sweden to avail themselves of caring services. This did not seem to be the case in the present study as most of the children born to immigrant parents had not received a diagnosis of autism (or any other severe developmental disorder for that matter) before they arrived in Sweden (and more than a third were actually born in Sweden).

In the 1984 study there was already a slight trend towards autism being more common in the urban than in the rural area and this tendency was particularly pronounced if one considers the prevalence of AD and AC combined (7.5/10 000 v. 5.6/10 000 in that study). In this new study the tendency is more marked (8.4/10 000 v. 5.6/10 000 for AD, and 3.2 v. 1.6/10 000 for AC). However, all the higher prevalence for autism in the urban region is accounted for by autism in children born to immigrant parents.

In the 1984 study cases of autism represented two-thirds of the whole group. In the new study this proportion was almost three in four. In the first study from 1980 the same ratio was one in two. This shift towards more cases being diagnosed as AD and relatively fewer as AC (or other childhood psychosis) in all probability is a reflection of autistic symptoms now being referred relatively early in childhood: seeing the children when they are two to five years of age allows the classic symptoms of autism to be observed and a diagnosis of AD made. Previously, when one often had to rely on retrospective case histories, cautious diagnoses of AC or other childhood psychosis were sometimes made because all the classic symptoms of autism were no longer present and parents and other care-givers could not say for certain whether those symptoms had ever occurred. In other cases care-givers could not be certain that onset of the disorder had been before the age of 30 months.

Autism in all previous studies in the field has been strongly associated with male sex, and in this study boys outnumbered girls by four to one. Again we found a clear trend towards increasing boy:girl ratios with increasing IQ, a tendency originally highlighted by Wing (1981).

As in our previous studies social class did not differentiate AD or AC from a comparison group of primary-school children without major handicaps.

Almost half of the children with AD and AC had major signs of brain damage/dysfunction. This rate of organicity has continued to increase throughout the population-based studies in Göteborg. It provides support for the notion that the rate of non-organic cases of autism will dwindle rapidly as our neurobiological tools become increasingly sophisticated (Gillberg, 1988).

In summary, it appears that the rate of autism in Göteborg is higher than previously thought and is in the range of 1/1000 rather than 1/2000 to 1/5000. The increased rate is partly due to better detection but is also accounted for by autism in immigrant families. This latter point is underscored by the fact that in the rural area, where no immigrants had settled, the increase in prevalence of autism over the eight-year study period was much smaller than in the urban area. The possibility that some of the increased prevalence could be the result of a broader concept of autism on the part of the senior author over the years has not been critically examined. Nevertheless, the results of an autism rate about double that previously reported is in good accord with at least one recent study in the field (Bryson *et al*, 1988).

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