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ORIGINAL PAPER

Autism in the Faroe Islands. An Epidemiological Study

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Abstract The Faroe Islands are considered to be a genetic isolate. This population study of the prevalence of autism sought to identify a representative cohort for future genetic studies. In 2002 all schools were screened for autism spectrum disorders. The target population were all children born in 1985 through 1994 and living in the Faroe Islands on December 31, 2002. Children who screened positive for autism characteristics were examined using the Diagnostic Interview for Social and Communication Disorders (DISCO). Of the children aged 8 through 17 years, 0.56% had childhood autism, Asperger syndrome or atypical autism. The male:female ratio was just under 6:1. The prevalence of autism in the Faroe Islands was very similar to that reported from many western countries.

Keywords autism spectrum disorder · autism · prevalence · population study · Faroe Islands

Introduction

Autism (WHO, 1993; APA, 1994) is no longer considered an extremely rare disorder (Gillberg & Wing, 1999). Several recent studies have reported an overall prevalence for autism spectrum disorder (including childhood autism, Asperger syndrome, and atypical autism (pervasive developmental disorder not otherwise specified—PDD NOS) of more than 0.5% of the general population of children (Fombonne, 2003). Other studies have referred only to children diagnosed and registered as having autism in specialized services, indicating that the reported rate must be a minimum figure (Yeargin-Allsopp et al., 2003; Gillberg, Cederlund, Lamberg, & Zeiljon, 2006).

Autism is one of the most strongly heritable of all developmental and psychiatric disorders (Rutter, 2000). However, the mode of inheritance is not known, even though it is likely that there are several different genetic subgroups. One such—rare group might be an autosomal recessive single gene variant. Another rare group might represent an X-linked variant. A large group would be the polygenic variant in which several autism susceptibility genes act in concert to produce the full-blown syndrome. Many autism genetic studies have been performed in recent years, including about a dozen genome scan studies, but, by and large, specific variant genes have remained elusive (Jamain et al., 2003). Most authors acknowledge that not only variant or mutated genes contribute to autism; environmental factors also play some role (Gillberg & Coleman, 2000). In recent years, methyl mercury has been suggested to be one such possible environmental factor involved in the complex pathogenesis of some autism cases (Geiger & Geiger, 2004), even though the empirical evidence (e.g. Madsen et al., 2003), by and large, does not support its role. Some weak support for an association between maternal methylmercury exposure and developmental problems in the child was found in a study in the Faroe Islands (Rice, 2000).

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In order to better understand the genetics of autism spectrum disorder, it is important to (1) examine cases representative of all affected individuals, and (2) identify genetically more homogeneous cohorts that can then be subjected to molecular genetic study. We therefore set out to ascertain all cases of autism spectrum disorders in the Faroe Islands, a region which would, by most accounts, be considered a genetic isolate. The Faroe Islands over the last 500 years have had very little immigration into the country and the gene pool is fairly stable. Interestingly, the Faroe Islands also represent a region with a relatively very high level of exposure to mercury, because of the high population intake of polluted meat from pilot whales (known to contain substantial quantities of mercury). The first step of the research was a total population study of school age children. It is this study that will be reported on here.

Method

Target Population

All children born in the 10-year period from 1985 through 1994 and living in the Faroe Islands on December 31, 2002 comprised the target population. There were 7,689 children (3,895 boys, 3,794 girls) who met these criteria. The total population of the 18 Faroe Islands was 47,704 on December 31, 2002. There are only two towns in the Faroe Islands, Torshavn (the capital with about 18,420 inhabitants) and Klaksvik (with about 5,247 inhabitants). The remaining population live in rural (including remote) areas and small villages. Some of the islands are linked by bridges or tunnels, and most of the small islands can be reached daily by boat or helicopter. Census population figures for the Faroe Islands were provided by the central population register in Torshavn.

Procedure

The senior author made radio and television appearances and gave open lectures describing autism and the need for a population study of autism spectrum disorders in late 2000, and again in the spring of 2002. The lectures were attended by many parents of problem children. The two first authors (AE and HK) are clinical psychologists who have worked in Faroe Islands child services for many years, mostly doing diagnostic work, including in the field of autism. They were also present at these lectures. The senior author mentioned, at the end of the lectures, that parents, who suspected that their child might be suffering from an autism spectrum disorder, might contact the psychologists.

During 2002 the two clinical psychologists contacted all schools ($n = 65$) and visited and lectured on autism spectrum disorders for the teachers in all schools with more than 10 pupils ($n = 52$). The lecture was delivered in a rather standardized format and included a detailed account of symptoms and clinical presentations of typical and atypical autistic disorder and of Asperger syndrome. The smaller schools were all contacted by the first author, who reviewed—with the teacher over the phone—all individual children in these schools. No child in these smaller schools raised suspicion of suffering from an autism spectrum disorder.

The psychologists are well-known to individual teachers on the islands. Several of the teachers in schools with more than 10 pupils reported a number of anonymous children who raised suspicion of suffering from and autism spectrum disorder. These teachers were asked by the psychologist to ask the parents of these children if they—and the child—were willing to participate in the study.

Screening

Screening—producing a total of 56 suspected cases—was done in three stages.

First, the only two special schools for children with developmental disorders that exist in the Faroe Islands (one in Torshavn, and one in Klaksvik) were screened by going through the registers and asking staff (teachers, physiotherapists, speech pathology therapists, psychologists and consultant doctors) about each individual child attending the special school/class. Children with developmental disorders including autism spectrum disorders are routinely assessed at these schools by the two psychologists and other specialists. (All children diagnosed at the Torshavn hospital would be included in this group.) This screening contributed 19 individuals, who were targeted for individual examination (see below). Two of the children in this group who had recently been worked up and diagnosed by expert clinicians as suffering from autism spectrum disorders had parents who did not want to participate ''again'' in individual examinations, but were happy for the (anonymous) available record data of the children to be reported here. This means that 17 children from this subgroup were included in the detailed assessment protocol.

Second, all children who attended regular schools were screened. Except for those who are in special schools (see above), all Faroe Islands children attend regular school from age seven through 16 years, and

the vast majority continue attending public schools for another two or three years. Twenty-five children, previously undiagnosed raised teacher suspicion of suffering from an autism spectrum disorder. The parents of these children were contacted and asked for permission to have the teacher screen the child in the school using the Asperger Syndrome and high-functioning autism Screening Questionnaire (ASSQ) (Ehlers & Gillberg, 1993). Four families refused further participation, but the teacher descriptions of the children suggested strongly that the children might be suffering from Asperger syndrome. For those 21 children whose parents consented, the ASSQ was completed by the teacher who knew the child best. Seven children out of these 21 (33%) raising teacher suspicion scored under the recommended cut-of of 20 for suspected autism spectrum disorder, and were not further assessed. The remaining 14 were targeted for individual examination.

Finally, 12 families with previously undiagnosed children were included for a variety of reasons: suspected by the first two authors who had seen them at the special school ($n = 6$), suspected and reported by Social services psychologist ($n = 2$), by parent ($n = 2$), special education teacher ($n = 1$), or psychologist in private practice ($n = 1$). All of these participated in the in-depth examination.

Thus, a total of 43 individuals were targeted for further clinical examinations and DISCO-10-interviews (see below).

Examination of Suspected Cases

All these 43 children whose parents agreed to participate were then assessed by one of the two psychologists.

Children who, after the psychologist's examination, remained doubtful as to their caseness had their files reviewed by the Swedish psychologist (EB), and the senior author (an international expert on autism), and a few ($n = 5$) were examined in depth by him.

Participation Rate

As noted above, seven ''teacher-suspected'' children were screened out at an early stage, based on results on the ASSQ. Four further children had parents who declined participation altogether (constituting 7% of the total sample ($n = 56$) reported). Based on the information provided by the teachers, these four individuals were all strongly suspected of suffering from Asperger syndrome. The remaining 45 children comprised of two children who—after clinical evaluation including DISCO-interview—did not qualify for a clinical diagnosis of an autism spectrum disorder, and two further children—previously diagnosed with autism/Asperger syndrome, whose parents refused to take part in the detailed psychological evaluation. These two children, one boy with Asperger syndrome born in 1990 and a girl with childhood autism born in 1992, were included in some analyses of *all known diagnosed cases ($n = 43$)* since they had been worked up and diagnosed with in-depth standard assessments at the Torshavn special school, where they had been meticulously examined by a child psychiatrist and a child psychologist a few years prior to the study.

Of the 43 cases in this final autism spectrum disorder sample, 41 had parents who were given a DISCO-10 interview (see below). It is this latter group that will be reported on in more detail in the Results section.

Methods used in the Diagnostic Procedure

All children in the final sample ($n = 41$) meeting clinical diagnostic criteria for an autism spectrum disorder (and at least one of their parents, usually the mother) were seen by at least one of the two psychologists, who used the Diagnostic Interview for Social and Communication Disorders/DISCO-10 (Wing, Leekam, Libby, Gould, & Larcombe, 2002) when interviewing the parent (or both parents) and an unstructured/semistructured clinical interview when assessing the child, inquiring (whenever child's overall and verbal abilities allowed) about interests and skills patterns, peer relations, family relationships, and about formal general information knowledge. Teachers—again—completed the ASSQ for verbal children. School reports were reviewed. Medical records and psychologist reports were retrieved and analyzed. Clinically clear-cut cases were seen only by the first two authors. All cases considered difficult to classify were seen also by the senior author ($n = 5$). He took a detailed autism-orientated clinical history of the child's early development and current symptoms at face-to-face interview with the mother, checking the DSM-IV autistic disorder criteria and the Gillberg criteria for Asperger syndrome. He also examined the child psychiatrically and neurodevelopmentally drawing on his thirty years of clinical expertise working in-depth with several hundred families affected by autism. The clinical examination (including interview with mother) took 90–120 min in each case.

Diagnostic Classification

DISCO interviews and child assessments were done in all cases. Much more information was available for some

cases. Clinical diagnoses were based on as much information as possible in each case. DISCO-diagnoses—which, incidentally, are not mutually exclusive—were generated according to a computerized algorithm provided by Lorna Wing and Judy Gould. All information available was reviewed by the three authors not residing in the Faroe Islands (EB, ICG and CG) and final clinical diagnosis was established only after this procedure. In the vast majority of cases there was general agreement on diagnosis across the whole group of researchers.

The following diagnostic criteria used when making *clinical diagnoses* were (a) ICD-10 criteria for childhood autism; (b) Gillberg (1991) criteria for Asperger syndrome; (c) ICD-10 criteria for atypical autism with the added requirement that a case thus diagnosed could not meet full criteria for childhood autism or Asperger syndrome; and (d) ICD-10 criteria for disintegrative disorder.

The reason for using the Gillberg criteria for Asperger syndrome was the now widely accepted notion that very few individuals really meet ICD-10 criteria for Asperger syndrome (Leekam, Libby, Wing, Gould, & Gillberg, 2000). Not even Hans Asperger's own cases meet ICD-10 diagnostic criteria for the condition carrying his name (Miller & Ozonoff, 1997). The problem with the ICD-10 is the insistence on normal development in the first three years of life, including not only normal intellectual and language development, but also ''normal curiosity about the environment'', a requirement that almost never applies in individuals suffering from disorders in the autism spectrum.

The computerized algorithm criteria provided by Wing and Gould were used when making *DISCO-diagnoses.* The following categories were included: (a) ICD-10 childhood autism; (b) ICD-10 atypical autism; (c) ICD-10 disintegrative disorder; (d) Gillberg's Asperger syndrome; and (e) DSM-IV PDD NOS.

IQ-level

The vast majority of children in the atypical autism and Asperger syndrome groups had been tested with the WISC-R (Wechsler, 1981). Those with childhood autism had usually been tested on other tests. In those intellectually low-functioning individuals for whom no test was available, IQ was estimated on the basis of the Vineland developmental portion that is part of the DISCO-interview. IQ-levels were assigned as follows: (a) severe mental retardation (SMR) in those with tested or estimated IQ under 50; (b) mild mental retardation (MMR) in those with tested or estimated IQ of 50–69; (c) near average intelligence (NA) in those with tested IQ of 70–84; (d) average IQ (A) in those with tested IQ of 85–114; and (e) above average IQ (AA) in those with tested IQ of 115 and above.

Statistical Methods

Poisson-distributed 95% confidence intervals (ci) were calculated for population absolute rates and overall prevalence rates.

Ethics

The study was approved by the Scientific Ethics Committee of the Faroe Islands.

Results

Overall Prevalence Rates of Clinically Diagnosed Autism Spectrum Disorders

According to the clinical evaluations performed in the context of the present study, a total of 0.53% (41 individuals, ci 0.36–0.70%) of the total population of children born in 1985–1994 and living in the Faroe Islands on December 31, 2002, had an autism spectrum disorder (Table 1). Of these, 17 (41%) had been formally diagnosed as having a disorder in the autism spectrum before the study took place. Two further children, whose parents did not want for them to take part in the study, had received expert diagnoses of childhood autism (one girl) and Asperger syndrome (one boy) before the study took place. Including these two individuals in the estimation of overall prevalence,

Table 1 Rates of clinical diagnoses of autism spectrum disorders in the Faroe Islands

Clinical diagnosis	Boys *n*	Boys population prevalence	Girls *n*	Girls population prevalence	Total *n*	Total population prevalence	95% ci	
							lower	upper
Childhood autism	9	0.23%	3	0.08%	12	0.16%	0.07%	0.25%
Asperger syndrome	17	0.44%	3	0.08%	20	0.26%	0.14%	0.38%
Atypical autism	9	0.23%	0	0.0%	9	0.12%	0.04%	0.20%
Autism spectrum disorder total	35	0.90%	6	0.16%	41	0.53%	0.36%	0.70%

95% confidence interval (ci) calculated from exact Poisson distributions

the rate of autism spectrum disorders in the Faroe Islands in this age group was 0.56% (ci 0.38–0.73%).

Of this collapsed group of 43 clinical cases, 30% were given clinical diagnoses of ICD-10 childhood autism, 49% of Gillberg's Asperger syndrome, and 21% ICD-10 atypical autism. No cases of disintegrative disorder were found. (Including the four cases with strongly suspected Asperger syndrome who were not examined, the overall prevalence rate for autism spectrum disorder would be 0.61%.)

Overall Prevalence Rates of DISCO-diagnoses of Autism Spectrum Disorders

Of the 41 cases who received the DISCO and who had been clinically diagnosed as having an autism spectrum disorder, DISCO-algorithm criteria were met by 51% for childhood autism, and 39% and 7%, respectively for Gillberg and ICD-10 Asperger syndrome (Table 2). There were no cases of disintegrative disorder.

Of those with a clinical diagnosis of childhood autism, all but one (who met criteria for PDD NOS and social impairment) (92%) met DISCO-criteria for childhood autism. Corresponding rates were 67% for atypical autism and 80% for Gillbergś Asperger syndrome. Interestingly, 50% of those with a clinical diagnosis of Asperger syndrome met DISCO-criteria for childhood autism (see Table 4 in Appendix).

Only one child met DISCO algorithm criteria for Kanner's autism (corresponding to a prevalence rate of 1.3 in 10,000 children).

Gender Aspects

Only seven girls with clinical diagnoses of autism spectrum disorders were found, corresponding to a total population girl prevalence rate of 0.19% (7/3794). This should be contrasted with the very much higher rate among boys (prevalence rate 0.92%, 36/3895). The overall population-adjusted male: female ratio was 5.0:1.

IQ-level

All but one of the children with a clinical diagnosis of childhood autism were classified as having SMR. One child in this group had average IQ. Two children in the Asperger syndrome group had MMR, but all the others in this group and the group with atypical autism had IQs > 70. There were no significant differences across boys and girls as regards IQ-level.

Table 2 DISCO-10 diagnoses in examined group ($n = 41$)

DISCO diagnosis	Clinical diagnosis		
	Autism $n = 12$	Atypical autism $n = 9$	Asperger syndrome $n = 20$
(ICD-10) Childhood autism	11	0	10
(ICD-10) Atypical autism	0	6	0
(ICD-10) Asperger syndrome	0	2	7
(Gillberg & Gillberg) Asperger syndrome	0	0	16
(DSM-IV) PDD-NOS	1	2	4
(Wing & Gould) Social impairment	12	3	20
(Kanner) Early infantile autism	1	0	0

Table 3 Number of autism spectrum disorders according to year of birth

Year of birth (n of birth cohort)	Childhood autism	Asperger syndrome	Atypical autism	All spectrum autism disorders	95% ci lower	95% ci upper
1985 (683)	1	3	0	4	0	8
1986 (658)	2	2	0	4	0	8
1987 (746)	0	1	0	1	0	3
1988 (799)	0	4	0	4	0	8
1989 (838)	0	2	2	4	0	8
1990 (884)	2	2	3	7	1	13
1991 (818)	0	2	1	3	3	7
1992 (771)	2	2	1	5	1	10
1993 (740)	3	0	0	3	0	7
1994 (716)	2	2	2	6	1	11
1985–1994 (7689)	12	20	9	41	28	54

95% confidence intervals (ci) calculated from exact Poisson distributions

Year of Birth

There was a non-significant trend towards higher prevalence rates of autism spectrum disorders in younger as compared with older children (Table 3).

Familial Factors

There was one pair of siblings (brother and sister born in 1990 and 1988, both with Asperger syndrome) and another pair of second cousins in the cohort (boys born in 1990 and 1991, both with Asperger syndrome). One boy with childhood autism (born in 1994) had a younger sister (born after 1994, not in the cohort) with atypical autism and a second-degree female relative with childhood autism (born in 1993, in the cohort). One boy with Asperger syndrome (born in 1985) had a younger half-brother with childhood autism (born after 1994, not in the cohort) and a second-degree male relative with childhood autism (born in 1993, in the cohort), whose paternal uncle (not in the cohort) had childhood autism.

This means that a minimum of eight of the 43 children in the cohort were closely genetically related.

Discussion

The overall rate for autism spectrum disorder in the Faroe Islands was 0.56%, a finding which is very similar to that obtained in several autism prevalence studies performed in other parts of the western world over the past decade (see Gillberg & Wing, 1999; Fombonne, 2003 for recent overviews). These, seemingly convergent findings, could be taken as an indication of the similarity across regions and populations when it comes to the behavioural presentation of autism.

However, there are at least two—partly conflicting—reasons why such a conclusion might be regarded with some scepticism. First, given the considerable amount of inbreeding in an isolated population, with a genetic disorder such as autism, one would have expected a higher prevalence of autism spectrum disorders in the Faroe Islands than in genetically more heterogeneous populations. On the other hand, hypothetically, autism—seen in an international perspective—could be the result of, for instance, 3–5 genes acting in concert, out of a total of, for instance, 30 possible autism susceptibility genes. These 30 genes could, again hypothetically, combine in an enormous number of different 3–5 gene combinations to produce autism. The number of possible susceptibility genes would probably be very much lower in a genetic isolate such as the Faroe Islands, meaning that there would be a very much lower rate of ''autism risk'' 3–5 gene combinations. This would then lead to a much lower rate of autism than in other regions where the autism ''gene pool'' would be larger. Given the possibility that these two mechanisms - one acting to increase the risk of autism, the other to decrease it—might be in operation in the Faroe Islands, the 0.6% rate, in spite of being on par with rates found in other parts of the world, might actually mask underlying major differences across populations rather than in itself being supportive of any unifying theory for autism etiology.

The Faroe islands are a genetic isolate, but it is also a region of the world in which the population is potentially at much higher risk of methyl mercury exposure than populations from other regions. Fish consumption is high and it is well known that polluted meat from pilot whales is high in methyl mercury (Weihe et al., 2003.). We have no data on fish consumption in children with and without autism spectrum disorders, and no inferences or conclusions can be drawn regarding any possible association of methyl mercury with autism in this population.

The high male:female ratio suggests that some girls with autism spectrum disorders may have been missed. Recent studies have tended towards male: female ratios of 3:1 rather than 5.0:1 as seen here (Gillberg et al., 2006). Also, several new studies of girls with neuropsychiatric disorder have documented a high rate of underdiagnosis as compared with boys (Kopp & Gillberg, 2005). Given that knowledge about autism is relatively ''new'' in the Faroe Islands it is likely that some girls with autism in this population may have remained undetected in spite of the rather meticulous screening of the Faroe Islands schools performed. There was no trend towards girls having lower IQ in this sample, but the numbers included were very small, and generalised conclusions are not warranted. It is also possible that the isolated nature of the gene pool may have contributed to there actually being a very low number of females with autism in the Faroe Islands population.

The proportion of Asperger syndrome and atypical autism cases compared to ''classic autism'' cases was relatively similar to that found in other studies where subgrouping within the autism spectrum has been attempted (Gillberg & Wing 1999, Fombonne, 2003). Nevertheless, it is not unlikely that some (particularly some high-functioning) individuals with atypical autism may have been missed in the present study. The prevalence estimate for autism spectrum disorders total, even though probably as close as one can get to a reliable estimate of the general population rate of such disorder, should therefore be seen as a minimum figure. Interestingly, if results had been based only on the DISCO-interviews, the prevalence for ''childhood autism'' would

have come out considerably higher (and Asperger syndrome correspondingly much lower). In our view, and depending on whether or not one wants ''childhood autism'' to remain a more ''severe disorder'' in relatively lower functioning individuals (and ''Asperger syndrome'' a condition with implications for a somewhat less severe outcomes) diagnostic interviews such as the DISCO and the ADI-R (Lord, Rutter, & Le Couteur 1994) may be seen to overdiagnose ''childhood autism'' in cohorts suspected of suffering from an autism spectrum disorder (e.g. Arvidsson et al., 1997; Billstedt Gillberg, & Gillberg, 2005). According to the present results, half or more of all children with the clinical presentation of Asperger syndrome meet algorithm criteria for childhood autism on the basis of information generated at parent interview.

The non-significant trend for an increase in prevalence over time should be interpreted with caution given the very small sample size. If indeed a reflection of a true increase, the finding is likely to be explained by better knowledge about autism during recent years and hence a rise in reported cases among the youngest children in the cohort.

The design of the study had several strengths, including the total population character and excellent coverage in a small and isolated region. The fact that very few people were involved in screening and diagnosis is an additional strength, decreasing the risk of measurement error. However, there are also considerable limitations, including the failure to perform a meticulous personal examination (psychiatric, psychological, *and* physical) on each child and the relative lack of autism knowledge in the Faroe Islands. Nevertheless, we are confident that the findings are representative at least as regards the boys in the study. It is possible that the rather low level of autism knowledge in the region may have precluded identifying the majority of the girls with autism spectrum disorders in the population. Girls with autism may have a slightly different phenotypical presentation in many cases, and, hence, could be missed in studies where the prototypical male presentation of autism is the gestalt around which screeners and diagnosticians may be focusing.

In summary, autism spectrum disorders are as common in the Faroe Islands as in other parts of the world. It is not clear that the rate of 0.53–0.61% of children aged 7–16 years is reflective of the same underlying mechanisms - genetic or otherwise - as are in operation in other regions. Further studies on the genetic and environmental factors (and their interaction) in the population identified may help shed light on this issue.

Appendix

Table 4 Clinical and DISCO-diagnoses, year of birth, gender and IQ-level in 41 children

	Year of birth	Sex	IQ	Clinical diagnosis	DISCO-diagnosis
1.	94	M	SMR	Autism	Childhood autism
2.	94	M	SMR	Autism	Childhood autism
3.	93	M	SMR	Autism	Childhood autism
4.	93	M	SMR	Autism	PDD-NOS
5.	92	M	SMR	Autism	Childhood autism
6.	92	M	SMR	Autism	Childhood autism
7.	90	M	SMR	Autism	Childhood autism
8.	86	M	SMR	Autism	Childhood autism
9.	86	M	SMR	Autism	Childhood autism
10.	93	F	SMR	Autism	Childhood autism
11.	90	F	SMR	Autism	Childhood autism
12.	85	F	A	Autism	Childhood autism
13.	92	M	NA	Atypical autism	Atypical autism, PDD-NOS
14.	91	M	NA	Atypical autism	Atypical autism
15.	90	M	NA	Atypical autism	
16.	90	M	NA	Atypical autism	Asperger syndrome
17.	94	M	A	Atypical autism	Atypical autism
18.	94	M	A	Atypical autism	Atypical autism
19.	90	M	A	Atypical Autism	Atypical autism, PDD-NOS
20.	89	M	A	Atypical autism	Atypical autism
21.	89	M	A	Atypical Autism	Atypical autism
22.	90	M	MMR	Asperger syndrome	Childhood autism, Asperger syndrome
23.	86	M	MMR	Asperger syndrome	Childhood autism, Asperger syndrome
24.	94	M	NA	Asperger syndrome	Childhood autism, Asperger syndrome
25.	86	M	NA	Asperger syndrome	Childhood autism, Asperger syndrome

Table 4 continued

	Year of birth	Sex	IQ	Clinical diagnosis	DISCO-diagnosis
26.	94	M	A	Asperger syndrome	Childhood autism, Asperger syndrome
27.	92	M	A	Asperger syndrome	Asperger syndrome
28.	91	M	A	Asperger syndrome	Childhood autism, Asperger syndrome
29.	91	M	A	Asperger syndrome	Childhood autism, Asperger syndrome
30.	90	M	A	Asperger syndrome	Asperger syndrome
31.	89	M	A	Asperger syndrome	Asperger syndrome, PDD-NOS
32.	88	M	A	Asperger syndrome	Childhood autism, Asperger syndrome
33.	88	M	A	Asperger syndrome	PDD-NOS
34.	88	M	A	Asperger syndrome	Childhood autism, Asperger syndrome
35.	87	M	A	Asperger syndrome	Atypical autism
36.	85	M	A	Asperger syndrome	
37.	85	M	A	Asperger syndrome	Childhood autism, Asperger syndrome
38.	85	M	AA	Asperger syndrome	Asperger syndrome, PDD-NOS
39.	92	F	A	Asperger syndrome	Asperger syndrome
40.	89	F	A	Asperger syndrome	
41.	88	F	A	Asperger syndrome	Asperger syndrome, PDD-NOS

Childhood autism according to ICD-10

Atypical autism according to ICD-10

Asperger syndrome according to Gillberg

PDD-NOS according to DSM-IV

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