**Supplement**

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## A. Methods

### A1. Modified Chinese version of ASRS (MC-ASRS)

We selected the Autism Spectrum Rating Scale (ASRS) as a screening tool for the school-age population because of its good psychometric properties, its norm-based nature, its applicability to the population age, and the availability of parallel parent and teacher forms. Having secured approval from the developers (Multi-Health Systems, Inc., Toronto, ON, Canada), we developed a Chinese version (MC-ASRS) using iterative back-translation procedures in a pilot study in four study sites (Shanghai, Harbin, Guangzhou, and Changsha) from January to July 2014 [1]. The English version of the ASRS contains 71 items that yield separate scores for three scales: screening, DSM-5, and treatment. The screening scale comprises 60 items, including Social/Communication (19 items), Unusual behaviors (24 items), and Self-Regulation (17 items). These three scales are combined into a single composite score (Total score). A cut-off value of ≥60 has been recommended for screening in Western populations (https://www.mhs.com). The MC-ASRS includes a three-factor structure with 59 items, and a cut-off of 60 has a sensitivity of 94.2% and a specificity of 82.0%. The MC-ASRS has been validated as a reliable tool for screening autistic symptoms in Chinese children; receiver operating characteristic analysis has shown that it has excellent discriminant validity with an area under the curve value of 0.952 (95% CI: 0.936–0.967) [2, 3].

## A2. Sampling methods and geographic characteristics of study sites

Study sites were selected based on consideration of their representativeness for geography, socio-demographic features, and economic development as well as evidence of previous research experience in ASD. Mainland China has 32 provincial-level divisions: 23 provinces, four municipal cities (Beijing, Shanghai, Tianjin, and Chongqing), and five minority autonomous regions. After careful deliberation, eight cities (Shanghai, Guangzhou, Changsha, Chongqing, Chengdu, Wenzhou, Beijing, and Harbin) from five provinces (Zhejiang, Hunan, Sichuan, Guangdong, and Heilongjiang) and three municipalities (Shanghai, Beijing, and Chongqing) were selected to participate in the study from July 2014 to December 2016. These eight cities occupy 2.1 percent of China's land area and comprise ~10% of China's total population. The economic status based on average per capita income in these cities is representative of the different levels of economic development nationally (i.e., Shanghai, Beijing, and Guangzhou are in the top tier, Wenzhou and Changsha in the middle, and Chengdu, Harbin, and Chongqing in the low tier). Each city is divided into a variable number of districts and streets, and we selected 82 streets from 17 districts in the eight cities from the local Public Security Bureau Household Registration System (PSBHRS) of each city. Combination of the following factors was considered when selecting the streets and districts: (1) population from 5,000 to 15,000; (2) lowest rate of migrant influx in the past year; and (3) a good level of cooperation expected from the local government.

The eligible children were identified in each selected district through the local PSBHRS. The inclusion criteria were: (1) aged 6 to 12 years (born between January 1, 2002 and December 31, 2008). These ages were chosen for two reasons: (a) a definitive diagnosis of ASD can be obtained at age 4 or later [4]; and (b) ~99% of these children were attending public school because of government mandate, and these schools are free by government policy; and (2) the children's families were registered in the selected areas, lived in the selected regions for at least 6 months during the last 12 months, and were enrolled during 2014–2016.

**A3. Sample Size**

Sample size calculations were performed with an assumption of a prevalence of 1%, an alpha of 0.05, power of ≥0.8, and allowing for 5/1000 error. Based on this calculation, ~15,000 participants for each site, and a total of 120,000 participants for the entire study were determined. This study sample represented ~0.12% of the total population aged 6–12 years in China during the study period. The total number of Chinese children aged 6–12 years was estimated at ~100 million (N = 99,939,042) (http://www.stats.gov.cn/tjsj/pcsj/rkpc/6rp/indexch.htm).

**A4. ASD screening procedures for children in Sources 1 and 2**

Different procedures were applied to the children from the different sources (**Figure 1**). For the children in Sources 1 and 2, we implemented a two-step screening procedure (steps A and B):

*Step A: Use of parent and teacher MC-ASRS scales for screening:* We used parent and teacher MC-ASRS scales that were validated in our pilot study for screening [1-3]. For students enrolled in regular schools within the sampled districts (Source 1), parents of all eligible children received an information and consent letter from the school. Parents and teachers were given a screening booklet containing an information sheet about ASD and the study, the MC-ASRS questionnaire, and the instructions for completing it, along with an envelope to return the completed questionnaire. Contact information for a trained investigator from the study team was provided to parents and teachers should they have questions about the study. Written parental consent was obtained. Principal classroom teachers were requested

to score each student using the MC-ASRS teacher version. Completed scales were checked on-site by field investigators before data entry. A total score of ≥60 on either the parent or teacher scale was considered positive. For students enrolled in schools outside their residential districts (Source 2), the City Student Information System was consulted to identify the schools attended. With the assistance of the Education Bureau, the study documentation and questionnaire packages were mailed to parents and teachers through the school administrative system.

*Step B: Screen by group interview and observation:* For children who were positive for screening in step A, a face-to-face group interview and classroom observation were conducted by medical professionals at schools to further identify participants with a high likelihood of ASD who needed to go to a hospital for final diagnosis. The medical professionals responsible for the group screening and interviews had been trained and were qualified to perform DSM-5 for ASD diagnoses. Children in groups of 5–6 were observed and interviewed, and those with one or more positive scores on the scale were recorded by the interviewer and defined as positive (**see group observation and interview sheet**); this took at least 15–20 min for each child. The screening procedure was as follows: (1) direct observation of children's activities in the classroom related to social interactions with peers, repetitive physical movements, and atypical sensory processing behaviors; (2) a brief conversation with several semi-structured questions, which were selected from the Autism Diagnostic Observation Scale Module 3 (ADOS-M3): (i) friends and relationships: Do you have some friends? Can you tell me about them?

What do you like doing together?; (ii) emotions: What do you like doing that makes you feel happy or angry? What kinds of things make you feel this way? Can you describe it?; and (iii) reporting of events: Can you describe what happened recently? (e.g., a holiday, vacation, or shopping trip). During this interaction, the interviewer used these questions to understand the individual's eye-contact modulation, non-verbal communication, facial and other emotional expressions, language and communication competence, and atypical behaviors. In addition, in order to minimize false negatives in step A, children who were screened negative, but recommended by their teachers as having behavioral problems, were also included in Step B screening. The behavioral problems included inattention, hyperactivity, anxiety, aggression, indiscipline, and social withdrawal. Children who were positive for step B, along with their parents, were invited to participate in an in-person autism diagnostic evaluation in dedicated clinics at each study site.

**Group observation and interview sheet**

| |
|---|
| **Basic information** |
| Subject name and study ID:<br><br>Gender: ○ Male ○ Female |
| Date of birth: ___Year ___Month ___Day |
| School name: |
| Class: |
| ASRS score: |
| **Observation and interview** |
| **A. Direct observation of children's activity in the classroom** |
| 1. Abnormal social interactions with peers (e.g., whether initiated conversation with peers)<br><br>○Yes ○No |
| 2. Repetitive physical movements (e.g., jumping or whirling)<br><br>○Yes ○No |
| 3. Atypical sensory processing behaviors (e.g., ring sensitive)<br><br>○Yes ○No |
| **B. Conduct semi-structured questions** |
| 1. Friends and relationships<br><br>Interview questions: Do you have some friends? Can you tell me about them? What do you like doing together?<br><br>2. Emotions |

| |
|---|
| Interview questions: What do you like doing that makes you feel happy or angry? What kinds of things make you feel this way? Can you describe it?<br>3.Reporting of events<br>Interview questions: Can you describe what happened recently? (e.g., a holiday, vacation, or shopping trip).<br><br>**C. Observe and evaluate the following behaviors and performance while conducting semi-structured questions.** |
| Abnormal eye contact modulation<br>○Yes ○No |
| Abnormal non-verbal communication<br>○Yes ○No |
| Abnormal facial and other emotional expressions<br>○Yes ○No |
| Abnormal reciprocal conversation<br>○Yes ○No |
| Rigidity or restricted interest<br>○Yes ○No |
| Atypical behaviors<br>○Yes ○No |

**Note:** Children with one or more "Yes" in sections A and C are defined as positive.

**A5. Screening and diagnostic procedures for children in Source 3**

Children with significant intellectual disability (ID) and ASD do not usually attend regular or mainstream schools in China. Instead, these children attend various special education schools and rehabilitation centers or stay at home. To receive welfare from the government, children with disabilities must have a confirmed diagnosis from hospitals approved by the local Disabled Persons' Federation (DPF) and register with the DPF. Therefore, all children in Source 3 were considered to be at risk for ASD (without preliminary screening), and were directly invited to participate in the diagnostic assessment for ASD at study clinical sites.

## A6. ASD clinical assessment teams

The clinical assessment team at each study site was led by a senior clinician with extensive experience in the diagnostic assessment of children with ASD. The diagnostic evaluation of autism was performed in the clinics of Children's Hospitals affiliated with Medical Schools at each study site. The clinicians responsible for the clinical and diagnostic assessment had received project-specific training on DSM-5 and were trained and certified to administer the Chinese versions of the Autism Diagnosis Observational Schedule (ADOS) and the Autism Diagnostic Interview-Revised (ADI-R) under the supervision of Western Psychological Service-certified Chinese trainers.

**A7. Method to estimate the prevalence of ASD**

The population denominators observed and the estimated numbers of ASD cases used to estimate ASD prevalence are shown by site, sampling source, and overall in **Table S5**. The overall observed ASD prevalence was 0.29% (95% CI: 0.26–0.32%). In regular school samples (Source 1: sampled districts), the response (Rate 1) between the screening and assessment phases (**Figure 1**) varied by study site and ranged from 20% to 100%. We had very poor response rates across the eight sites for screening at non-sampled districts (Source 2). According to the definition of "study population", we included these children to minimize possible selection bias. The sex ratios and age distributions of children who attended the schools within *versus* outside the sampled districts were comparable ($\chi^2 = 0.04$, $df = 1$, $P = 0.09$). Therefore, we estimated the numbers of ASD cases in those schools based on the observed rate from Source 1. For Source 3 (special education contexts), the observed response rates (Rate 3 in **Table S4**) from four pilot study sites were averaged and used to estimate the ASD numbers among non-responders across all sites. Using this approach, the estimated number of ASD cases was 867 for the target population sample, and the contributions of Sources 1, 2, and 3 were 38.5% (334), 3.4% (29), and 58.1% (504), respectively, thereby achieving a prevalence of 0.70% (95% CI: 0.64–0.74%).

**A8. Quality control**

We implemented several strategies to ensure the quality of data collection, including the following:

(1) Project-specific training: All site investigators and team members responsible for data collection received project-specific training. Clinicians responsible for ASD screening and diagnostic assessment received extensive training in the use of MC-ASRS and DSM-5 and were certified to reliably administer ADOS and ADI-R.

2) Maximization of the response and participant rates: The investigators and the team exerted their best efforts to disseminate the study information and educate the public about ASD in the community and schools.

3) Quality check for ASD case determination: Approximately 10% of ASD cases reported from each site were randomly selected by the principal investigator's team at the Children's Hospital of Fudan University for independent review and re-assessment. The review team included a panel of three senior and experienced clinicians with expertise in autism diagnosis who did not participate in the initial case evaluation.

## B. Tables

**Table S1. Gender distribution by study site and participation status**

| Site | Participants | | | | | Non participants | |
|---|---|---|---|---|---|---|---|
| | Male | % | Female | % | Total | Male | % |
| Shanghai | 9,076 | 52.1 | 8,345 | 47.9 | 17,421 | 1,510 | 55.0 |
| Guangzhou | 7,120 | 54.8 | 5,867 | 45.2 | 12,987 | 907 | 53.1 |
| Changsha | 5,861 | 52.4 | 5,323 | 47.6 | 11,184 | 157 | 52.7 |
| Harbin | 12,260 | 52.8 | 10,978 | 47.2 | 23,238 | 660 | 53.0 |
| Beijing | 4,216 | 53.2 | 3,704 | 46.8 | 7,920 | 1,686 | 50.3 |
| Chongqing | 11,698 | 52.5 | 10,577 | 47.5 | 22,275 | 1,620 | 53.8 |
| Chengdu | 8,504 | 52.9 | 7,587 | 47.2 | 16,091 | 340 | 54.1 |
| Wenzhou | 7,952 | 54.1 | 6,738 | 45.9 | 14,690 | 1,862 | 56.6 |
| **Total** | **66,687** | **53.0** | **59,119** | **47.0** | **125,806** | **8,742** | **53.7** |

Gender did not differ between participants and non-participants ($\chi^2 = 2.8$, $df = 1$; $P = 0.097$) and differed significantly among the eight study sites ($\chi^2 = 35.1$, $df = 7$, $P < 0.001$).

**Table S2. Age distribution by study site**

| Site | 6 years | | 7 years | | 8 years | | 9 years | | 10 years | | 11 years | | 12 years | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | n | % | N | % | N | % | n | % | N | % | n | % | N | % | n | % |
| Shanghai | 3,482 | 20.0 | 3,281 | 18.8 | 2,008 | 11.5 | 2,455 | 14.1 | 2,837 | 16.3 | 3,261 | 18.7 | 97 | 0.6 | 17,421 | 100.0 |
| Guangzhou | 1,707 | 13.1 | 1,892 | 14.6 | 1,612 | 12.4 | 1,582 | 12.2 | 1,726 | 13.3 | 1,632 | 12.6 | 2,836 | 21.8 | 12,987 | 100.0 |
| Changsha | 1,591 | 14.2 | 1,781 | 15.9 | 1,761 | 15.8 | 1,818 | 16.3 | 1,899 | 17.0 | 1,542 | 13.8 | 792 | 7.0 | 11,184 | 100.0 |
| Harbin | 12 | 0.1 | 4,081 | 17.6 | 3,366 | 14.5 | 3,304 | 14.2 | 3,567 | 15.4 | 2,351 | 10.0 | 6,557 | 28.2 | 23,238 | 100.0 |
| Beijing | 1,062 | 13.4 | 1,857 | 23.5 | 1,346 | 17.0 | 1,238 | 15.6 | 1,293 | 16.3 | 669 | 8.5 | 455 | 5.7 | 7,920 | 100.0 |
| Chongqing | 2,478 | 11. | 3,811 | 17. | 3,459 | 15. | 3,249 | 14. | 3,558 | 16. | 3,195 | 14. | 2,525 | 11. | 22,275 | 100. |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | | 1 | | 5 | | 6 | | 1 | | 3 | | 3 | | 0 |
| Chengdu | 2,682 | 16.7 | 2,816 | 17.5 | 2,224 | 13.8 | 2,171 | 13.5 | 2,301 | 14.3 | 2,210 | 13.7 | 1,687 | 10.5 | 16,091 | 100.0 |
| Wenzhou | 2,056 | 14.0 | 2,055 | 14.0 | 2,020 | 13.8 | 1,942 | 13.2 | 2,294 | 15.6 | 2,031 | 13.8 | 2,292 | 15.6 | 14,690 | 100.0 |
| **Total** | **15,070** | **12.0** | **21,574** | **17.2** | **17,796** | **14.2** | **17,759** | **14.1** | **19,475** | **15.4** | **16,891** | **13.4** | **17,241** | **13.7** | **125,806** | **100.0** |

$\chi^2$ = 13, 000, *df* = 42, *P <0.0001*

**Table S3. Age distribution and participation by age**

| Study population | 6yr | 7yr | 8yr | 9yr | 10yr | 11yr | 12yr | Total |
|---|---|---|---|---|---|---|---|---|
| **Participants (n)** | 15,070 | 21,574 | 17,796 | 17,759 | 19,475 | 16,891 | 17,241 | 125,806 |
| **(%)** | 12.0 | 17.2 | 14.2 | 14.1 | 15.4 | 13.4 | 13.7 | 100.0 |
| **Non-participants (n)** | 2,736 | 2,680 | 2,139 | 1,952 | 2,138 | 1,650 | 2,985 | 16,280 |
| **(%)** | 16.8 | 16.5 | 13.1 | 12.00 | 13.1 | 10.1 | 18.4 | 100 |
| **Total** | 17,806 | 24,254 | 19,935 | 19,711 | 21,613 | 18,541 | 20,226 | 142,086 |
| | 12.5 | 17.1 | 14.0 | 13.9 | 15.2 | 13.1 | 14.2 | 100.0 |

$\chi^2 = 718.4$, $df = 6$, $P < 0.0001$

**Table S4. Estimated prevalence of ASD by source and site**

| Site | N_total | Observed | | | | | | | | | Estimated | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ASD | Source1 | | | Source2 | | Source3 | | | n1 | n2 | n3 | n_total | P, ‰* | 95% CI# | |
| | | | N1 | Rate1 | n1 | N2 | n2 | N3 | n3 | Rate3 | | | | | | Ll, ‰ | Ul, ‰ |
| Shanghai | 17,421 | 41 | 14,490 | 0.6 | 25 | 2,731 | - | 200 | 16 | 0.22 | 38 | 7 | 57 | 102 | 5.9 | 4.7 | 7.0 |
| Guangzhou | 12,987 | 51 | 12,398 | 0.7 | 21 | 403 | - | 186 | 30 | 0.34 | 36 | 1 | 107 | 144 | 11.1 | 9.3 | 12.9 |
| Changsha | 11,184 | 31 | 9,744 | 1 | 23 | 1,425 | - | 15 | 8 | 0.20 | 36 | 5 | 29 | 70 | 6.2 | 4.8 | 7.7 |
| Harbin | 23,238 | 81 | 22,376 | 0.7 | 71 | 811 | - | 51 | 10 | 0.33 | 97 | 3 | 36 | 136 | 5.9 | 4.9 | 6.9 |
| Beijing | 7,920 | 46 | 7,112 | 0.6 | 34 | 783 | - | 25 | 12 | - | 61 | 7 | 43 | 111 | 14.0 | 11.4 | 16.6 |
| Chongqing | 22,275 | 56 | 20,010 | 0.2 | 16 | 2,167 | - | 98 | 40 | - | 28 | 3 | 14 | 174 | 7.8 | 6.7 | 9.0 |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | 3 | | | | |
| Chengdu | 16,091 | 32 | 15,021 | 0.7 | 23 | 1,035 | - | 35 | 9 | - | 26 | 2 | 32 | 60 | 3.7 | 2.8 | 4.7 |
| Wenzhou | 14,690 | 25 | 13,108 | 0.8 | 9 | 1,558 | - | 24 | 16 | - | 12 | 1 | 57 | 70 | 4.8 | 3.7 | 5.9 |
| **Total** | **125,806** | **363** | **114,259** | **-** | **22** | **10,913** | **-** | **63** | **14** | **0.28** | **33** | **29** | **50** | **867** | **6.9** | **6.4** | **7.4** |

N, sample size or population denominator; n, number of diagnosed ASD cases; Rate 1 or 3, response rate in Source 1 or 3 calculated as the proportion of children screened positive in the DSM-5 assessment; *P, prevalence of ASD; N1, N2, N3, sample size of investigation of Sources 1 , 2, and 3; n1, n2, n3, number of diagnosed ASD cases in Sources 1, 2, and 3

**Table S5. IQ distribution of children with ASD (N = 185)**

| WIS-C Full-scale IQ | Shanghai | Guangzhou | Changsha | Harbin | Beijing | Chongqing | Chengdu | Wenzhou | Total |
|---|---|---|---|---|---|---|---|---|---|
| | N (%) | N (%) | N (%) | N (%) | N (%) | N (%) | N (%) | N (%) | N (%) |
| Normal IQ (IQ ≥85) | 5 (17.9) | 10 (37.1) | 2 (14.3) | 30 (61.2) | 4 (36.4) | 1 (4.6) | 11 (55.0) | 3 (21.4) | 66 (35.7) |
| Borderline (IQ 70–84) | 3 (10.7) | 6 (22.2) | 2 (14.3) | 10 (20.4) | 2 (18.2) | 2 (9.1) | 6 (30.0) | 4 (28.6) | 35 (18.9) |
| Mild ID (IQ 50–69) | 4 (14.3) | 2 (7.4) | 1 (7.1) | 5 (10.2) | 2 (18.2) | 5 (22.7) | 1 (5.0) | 1 (7.1) | 21 (11.4) |
| Moderate/severe ID (IQ <50) | 16 (57.1) | 9 (33.3) | 9 (64.3) | 4 (8.2) | 3 (27.2) | 14 (63.6) | 2 (10.0) | 6 (42.9) | 63 (34.0) |
| **Total** | **28 (100.0)** | **27 (100.0)** | **14 (100.0)** | **49 (100.0)** | **11(100.0)** | **22 (100.0)** | **20 (100.0)** | **14 (100.0)** | **185 (100.0)** |

ASD, autism spectrum disorder; IQ, intelligence quotient; ID, intellectual disability

**Table S6. Gender differences in intellectual level, ASRS, ADOS, and ADI-R in children with ASD**

| Instrument | Boys with ASD | | Girls with ASD | | *Cohen's d* | *P value* |
|---|---|---|---|---|---|---|
| | ***n*** | **mean ± SD** | ***n*** | **mean ± SD** | | |
| Total ASRS score | 167 | 64.5 ± 13.6 | 44 | 64.5 ± 14.1 | *0.0* | *0.988* |
| WIS-C (N = 185) | | | | | | |
| Full IQ | 148 | 73.9 ± 28.7 | 37 | 55.7 ± 20.9 | *0.7* | *<0.0001* |
| Verbal IQ | 148 | 72.8 ± 31.6 | 37 | 55.0 ± 23.2 | *0.6* | *0.002* |
| Performance IQ | 148 | 71.9 ± 29.8 | 37 | 57.9 ± 25.1 | *0.5* | *0.010* |
| ADOS assessment (N = 164) | | | | | | |
| Communication | 130 | 4.8 ± 2.3 | 34 | 5.6 ± 2.9 | *0.3* | *0.090* |
| Social interaction | 130 | 9.1 ± 3.3 | 34 | 9.9 ± 4.1 | *0.1* | *0.250* |
| Play | 130 | 2.3 ± 3.1 | 34 | 2.1 ± 2.9 | *0.1* | *0.720* |
| Stereotyped behavior | 130 | 2.2 ± 1.9 | 34 | 2.3 ± 1.8 | *0.1* | *0.780* |
| ADI-R assessment (N = 154) | | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Social interaction | 125 | 18.0 ± 7.6 | 29 | 22.7 ± 6.9 | *0.6* | *0.003* |
| Communication–verbal | 125 | 12.0 ± 5.3 | 29 | 13.2 ± 5.5 | *0.2* | *0.280* |
| Communication–non-verbal | 125 | 7.4 ± 4.7 | 29 | 10.0 ± 4.3 | *0.6* | *0.037* |
| Stereotyped behavior | 125 | 4.3 ± 2.8 | 29 | 4.7 ± 2.9 | *0.1* | *0.368* |

ASD, autism spectrum disorder; SD, standard deviation; ASRS, Autism Spectrum Rating Scale; WIS-C, Wechsler Intelligence Scale for Children; IQ, intelligence quotient; ADOS, Autism Diagnosis Observational Schedule; ADI-R, Autism Diagnosis Interview-Revised.

**Table S7. Clinical features of newly- and previously-diagnosed ASD cases**

| Clinical variable | Newly diagnosed | | Previously Diagnosed | | *Cohen's d* | *P value* |
|---|---|---|---|---|---|---|
| | ***n*** | **Mean, SD** | ***n*** | **Mean, SD** | | |
| **Total ASRS score** | 127 | 61.1±12.1 | 84 | 69.7±14.2 | *0.4* | *<0.0001* |
| **WISC-C (available participants)** | | | | | | |
| Total IQ | 106 | 79.1±25.2 | 79 | 58.4±27.9 | *0.8* | *<0.0001* |
| Verbal IQ | 106 | 76.7±29.6 | 79 | 59.3±30.0 | *0.6* | *<0.0001* |
| Performance IQ | 106 | 75.9±28.4 | 79 | 59.9±28.4 | *0.6* | *<0.0001* |
| **ADOS assessment** | | | | | | |
| Communication | 83 | 4.1±2.0 | 81 | 5.9±2.7 | *0.8* | *<0.0001* |
| Social interaction | 83 | 8.7±3.5 | 81 | 9.9±3.4 | *0.3* | *0.026* |
| Play | 83 | 2.6±4.1 | 81 | 2.0±1.5 | *-0.2* | *0.166* |
| Stereotyped behavior | 83 | 1.8±1.8 | 81 | 2.6±1.9 | *0.4* | *0.007* |
| **ADI-R assessment** | | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Social interaction | 76 | 15.9±7.3 | 78 | 22.3±6.4 | *0.9* | *<0.0001* |
| Communication–verbal | 76 | 9.8±4.5 | 78 | 15.1±1.5 | *1.6* | *<0.0001* |
| Communication–non-verbal | 76 | 6.3±4.3 | 78 | 10.0±4.3 | *0.9* | *<0.0001* |
| Stereotyped behavior | 76 | 3.4±2.2 | 78 | 5.4±3.0 | *0.8* | *<0.0001* |

ASD, Autism Spectrum Disorder; SD, standard deviation; ASRS, Autism Spectrum Rating Scale; WIS-C, Wechsler Intelligence Scale for Children; IQ, intelligence quotient; ADOS, Autism Diagnosis Observational Schedule; ADI-R, Autism Diagnosis Interview-Revised.

**Table S8. Medical and psychiatric comorbidity by new *versus* previous ASD case status N (%)**

| Characteristics | Number of participants with comorbidity | Newly-diagnosed ASD with comorbidity | Previously-Diagnosed ASD with comorbidity | *P-value* |
|---|---|---|---|---|
| **Comorbidities assessed *via* medical records, n/N (%)*** | | | | |
| Epilepsy (N = 105) | 6/105(5.7) | 3/49(6.1) | 3/56(5.4) | *0.600* |
| Febrile seizures (N = 105) | 7/105(6.7) | 5/49(10.2) | 2/56(3.6) | *0.167* |
| Sleep disorder (N = 78) | 15/78(19.2) | 3/40(7.5) | 12/38(31.6) | *0.0007* |
| Gastrointestinal problem (N = 87) | 36/87(41.4) | 18/46(39.1) | 18/41(43.9) | *0.412* |
| Allergy (N = 76) | 12/76(15.8) | 6/40(15.0) | 6/36(16.7) | *0.587* |
| **Psychiatric comorbidities *via* Mini-kids interview*** | | | | |
| ADHD (available participants, N = 102) | 44(43.1) | 22/54(40.7) | 22/48(45.8) | *0.604* |
| Specific phobias (available participants, N = 94) | 10/94(10.6) | 6/47(12.8) | 4/47(8.5) | *0.503* |

| | | | | |
|---|---|---|---|---|
| Agoraphobia (available participants, N = 94) | 7/94(7.5) | 4/47(8.5) | 3/47(6.4) | *0.694* |
| Obsessive-compulsive disorder (available participants, N = 94) | 6/94(6.4) | 3/46(6.5) | 3/48(6.3) | *0.957* |
| Social phobia (available participants, N = 95) | 6/95(6.3) | 5/48(10.4) | 1/47(2.1) | *0.097* |
| Mania (available participants, N = 94) | 5/94(5.3) | 3/47(6.4) | 2/47(4.3) | *0.646* |
| Tics (available participants, N = 95) | 5/95(5.3) | 4/48(8.3) | 1/47(2.1) | *0.176* |
| Others (N = 1028) | 23/1028(4.3) | 10/511(2.0) | 13/517(2.5) | *0.307* |

ADHD, Attention Deficit Hyperactivity Disorder; Mini-kids, Mini International Neuropsychiatric Interview (MINI kid) for Children and Adolescents (parent version); others: oppositional defiant disorder, suicidal behavior, dysthymia, adjustment disorders, post-traumatic stress disorder, conduct disorder, panic disorder, psychotic disorders, anorexia nervosa, major depressive episode, separation anxiety disorder, alcohol dependence, substance dependence, bulimia nervosa, generalized anxiety disorder; *observed number of participants with comorbidity/number of all participants assessed with the comorbidity (percentage)

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