**Developmental Changes of Autistic Symptoms, ADHD Symptoms, and Attention Performance in Children and Adolescents with Autism Spectrum Disorder**

**Supplementary Tables**

Table S1-1. Demographic data (data without matching)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| N (%) or mean (SD) |  | ASD(n = 221) | TD(n = 182) |  | StatisticsWald χ2 or F (p) |
| Gender, male  |  | 199 (90.05) | 135 (74.18) |  | 17.71 (< .001) |
| Age  |  |  |  |  |  |
|  Time 1  |  | 11.06 (4.02) | 13.6 (5.96) |  | 22.77 (<.001) |
|  (age range) |  | (6-28) | (6-35) |  |  |
|  Time 2  |  | 18.06 (4.07) | 18.65 (6.03) |  | 1.34 (0.25) |
|  (age range) |  | (9-34) | (10-39) |  |  |
| Duration of follow up |  | 7.00 (1.66) | 5.05 (1.63) |  | 140.14 (<.001) |
| Intelligence at Time 1 |  |  |  |  |  |
| FIQ |  | 97.15 (20.07) | 111.44 (10.79) |  | 66.61 (<.001) |
| VIQ |  | 97.39 (20.95) | 111.87 (10.97) |  | 62.62 (<.001) |
| PIQ |  | 97.92 (18.73) | 109.31 (12.44) |  | 43.77 (<.001) |
| Father’s education  |  | (N=185) | (N=148) |  |  |
| Senior high school or below |  | 12 (6.49) | 7 (4.73) |  | 3.37 (0.34) |
| Senior high school |  | 61 (32.97) | 40 (27.03) |  |
| College  |  | 72 (38.92) | 72 (48.65) |  |
| Postgraduate  |  | 40 (21.62) | 29 (19.59) |  |
| Mother’s education  |  | (N=199) | (N=155) |  |  |
| Junior high school and below |  | 3 (1.51) | 8 (5.16) |  | Fisher’ s exactp = 0.19 |
| Senior high school |  | 76 (38.19) | 50 (32.26) |  |
| College  |  | 101 (50.75) | 80 (51.61) |  |
| Postgraduate  |  | 19 (9.55) | 17 (10.97) |  |

Note. ASD: autism spectrum disorder; TD: typically developing controls; SD: standard deviation; FIQ: Full-scale intelligence quotient; VIQ: verbal intelligence quotient; PIQ: performance intelligence quotient.

Table S1-2 Demographic data for the ASD and TD groups (including outliers)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| N (%) or mean (SD) |  | ASD (n = 245) | StatisticsWald χ2 or F (p) | TD (n = 194) | StatisticsWald χ2 or F (p) |
|  |  | Outlier subjects (n=24) | Non-outlier subjects (n=221) |  | Outlier subjects(n=12) | Non-outlier subjects (n=182) |  |
| Gender, male  |  | 20 (83.33) | 199 (90.05) | Fisher’ s exactP = 0.30 | 10 (83.33) | 135 (74.18) | Fisher’ s exactP = 0.73 |
| Age  |  |  |  |  |  |  |  |
|  Time 1  |  | 11.29 (3.91) | 11.06 (4.02) | 0.07 (0.79) | 11.92 (6.76) | 13.6 (5.96) | 0.88 (0.35) |
|  (age range) |  | (6-18) | (6-28) |  | (6-31) | (6-35) |  |
|  Time 2  |  | 18.17 (4.34) | 18.06 (4.07) | 0.01 (0.91) | 16.50 (7.04) | 18.65 (6.03) | 1.40 (0.24) |
|  (age range) |  | (10-25) | (9-34) |  | (10-36) | (10-39) |  |
| Duration of follow up |  | 6.88 (1.60) | 7.00 (1.66) | 0.12 (0.73) | 4.58 (1.44) | 5.05 (1.63) | 0.93 (0.34) |
| Intelligence at Time 1\* |  |  |  |  |  |  |  |
| FIQ |  | 83.04 (25.09) | 97.15 (20.07) | 9.79 (0.002) | 104.50 (11.04) | 111.44 (10.79) | 4.58 (0.03) |
| VIQ |  | 87.50 (28.21) | 97.39 (20.95) | 3.79 (0.05) | 105.67 (9.89) | 111.87 (10.97) | 3.61 (0.06) |
| PIQ |  | 83.76 (23.22) | 97.92 (18.73) | 10.39 (0.001) | 102.58 (14.48) | 109.31 (12.44) | 3.19 (0.08) |
| Father’s education  |  | (N=21) | (N=185) |  | (N=11) | (N=148) |  |
| Senior high school or below |  | 1 (4.76) | 12 (6.49) | Fisher’ s exactp = 0.94 | 3 (27.27) | 7 (4.73) | Fisher’ s exactp = 0.01 |
| Senior high school |  | 6 (28.57) | 61 (32.97) | 0 (0.0) | 40 (27.03) |
| College  |  | 10 (47.62) | 72 (38.92) | 4 (36.36) | 72 (48.65) |
| Postgraduate  |  | 4 (19.05) | 40 (21.62) | 4 (36.36) | 29 (19.59) |
| Mother’s education  |  | (N=21) | (N=199) |  | (N=11) | (N=155) |  |
| Junior high school and below |  | 2 (9.52) | 3 (1.51) | Fisher’ s exactp = 0.09 | 2 (18.18) | 8 (5.16) | Fisher’ s exactp = 0.17 |
| Senior high school |  | 5 (23.81) | 76 (38.19) | 3 (27.27) | 50 (32.26) |
| College  |  | 11 (52.38) | 101 (50.75) | 4 (36.36) | 80 (51.61) |
| Postgraduate  |  | 3 (14.29) | 19 (9.55) | 2 (18.18) | 17 (10.97) |

Note. ASD: autism spectrum disorder; TD: typically developing controls; SD: standard deviation; FIQ: Full-scale intelligence quotient; VIQ: verbal intelligence quotient; PIQ: performance intelligence quotient.

Table S1-3. Demographic data for the ASD and TD groups after matching for age

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| N (%) or mean (SD) |  | ASD(n = 194) | TD(n = 133) |  | StatisticsWald χ2 or F (p) |
| Gender, male  |  | 172 (88.66) | 99 (74.44) |  | 11.25 (< 0.001) |
| Age  |  |  |  |  |  |
|  Time 1  |  | 11.22 (4.02) | 12.08 (4.53) |  | 3.24 (0.08) |
|  (age range) |  | (6-28) | (6-29) |  |  |
|  Time 2  |  | 18.11 (4.13) | 17.26 (4.65) |  | 3.07 (0.08) |
|  (age range) |  | (9-34) | (10-36) |  |  |
| Duration of follow up |  | 6.59 (1.68) | 5.18 (1.54) |  | 88.3 (<.001) |
| Intelligence at Time 1 |  |  |  |  |  |
| FIQ |  | 97.14 (20.16) | 111.48 (10.66) |  | 52.49 (<.0001) |
| VIQ |  | 97.1 (20.78) | 111.98 (10.75) |  | 53 (<.0001) |
| PIQ |  | 97.81 (19.13) | 109.3 (12.51) |  | 34.12 (<.0001) |
| Father’s education  |  | (N=163) | (N=113) |  |  |
| Senior high school or below |  | 11 (6.75) | 4 (3.54) |  | Fisher’ s exactp = 0.12 |
| Senior high school |  | 52 (31.90) | 26 (23.01) |  |
| College  |  | 67 (41.10) | 62 (54.87) |  |
| Postgraduate  |  | 33 (20.25) | 21 (18.58) |  |
| Mother’s education  |  | (N=177) | (N=118) |  |  |
| Junior high school and below |  | 2 (1.13) | 3 (2.54) |  | Fisher’ s exactp = 0.59 |
| Senior high school |  | 67 (37.85) | 38 (32.20) |  |
| College  |  | 92 (51.98) | 64 (54.24) |  |
| Postgraduate  |  | 16 (9.04) | 13 (11.20) |  |

Note. ASD: autism spectrum disorder; TD: typically developing controls; SD: standard deviation; FIQ: Full-scale intelligence quotient; VIQ: verbal intelligence quotient; PIQ: performance intelligence quotient.

Table S1-4. Demographic data for the ASD and TD groups after matching for age and sex and deleting individuals with age > 20 at Time 1

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| N (%) or mean (SD) |  | ASD(n = 154) | TD(n = 106) |  | StatisticsWald χ2 or F (p) |
| Gender, male  |  | 135 (87.66) | 91 (85.85) |  | 0.18 (0.67) |
| Age  |  |  |  |  |  |
|  Time 1  |  | 10.51 (3.21) | 11.09 (3.04) |  | 2.20 (0.14) |
|  (age range) |  | (6-19) | (6-19) |  |  |
|  Time 2  |  | 17.39 (3.49) | 16.48 (3.49) |  | 4.25 (0.04) |
|  (age range) |  | (10-26) | (10-28) |  |  |
| Duration of follow up |  | 6.88 (1.66) | 5.39 (1.62) |  | 52.18 (<.001) |
| Intelligence at Time 1 |  |  |  |  |  |
| FIQ |  | 99.06 (18.97) | 112.79 (10.38) |  | 43.84 (<.001) |
| VIQ |  | 98.88 (19.3) | 113.15 (10.83) |  | 44.87 (<.001) |
| PIQ |  | 99.35 (18.68) | 110.54 (11.96) |  | 27.92 (<.001) |
| Father’s education  |  | (N=131) | (N=90) |  |  |
| Senior high school or below |  | 10 (7.46) | 0 (0.00) |  | Fisher’ s exactp = 0.01 |
| Senior high school |  | 43 (32.82) | 22 (24.44) |  |
| College  |  | 56 (42.75) | 52 (52.78) |  |
| Postgraduate  |  | 22 (16.79) | 16 (17.78) |  |
| Mother’s education  |  | (N=141) | (N=96) |  |  |
| Junior high school and below |  | 2 (1.42) | 1 (1.04) |  | Fisher’ s exactp = 0.25 |
| Senior high school |  | 56 (39.72) | 27 (32.53) |  |
| College  |  | 71 (50.00) | 56 (44.09) |  |
| Postgraduate  |  | 12 (8.51) | 12 (12.50) |  |

Note. ASD: autism spectrum disorder; TD: typically developing controls; SD: standard deviation; FIQ: Full-scale intelligence quotient; VIQ: verbal intelligence quotient; PIQ: performance intelligence quotient.

Supplementary Table S2. Group comparisons of ADHD, Oppositional and autistic symptoms in the main manuscript

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | ASD |  | TD |  | Group comparisons# |
| Mean (SD) | Time 1 | Time 2 | *Time 2 vs Time 1* |  | Time 1 | Time 2 | *Time 2 vs Time 1* |  | *Time 1* | *Time 2* |
| Cohen *d* | *t\** |  | Cohen *d* | *t\** |  | F (p) |
| Child  |  |  |  |  |  |  |  |  |  |  |  |  |
| Autistic symptoms (SRS) | (N=106) | (N=92) |  |  |  | (N=67) | (N=64) |  |  |  |  |  |
| Social communication | 36.98 (12.26) | 34.51 (13.6) | -0.19 | -1.99a |  | 8.76 (6.2) | 9.45 (9.47) | 0.09 | 0.77 |  | 305.07c | 161.2c |
| Stereotyped behavior | 18.82 (6.45) | 17.77 (6.49) | -0.16 | -1.9 |  | 3.68 (3.48) | 4.07 (4.5) | 0.10 | 0.76 |  | 312.09c | 202.66c |
| Social awareness | 20.62 (4.42) | 20.49 (4.86) | -0.03 | -0.82 |  | 12.43 (5.75) | 11.41 (6.18) | -0.17 | -1.07 |  | 111.17c | 99.39c |
| Social emotion | 11.75 (3.71) | 12.33 (4.47) | 0.14 | 0.97 |  | 3.19 (2.36) | 3.92 (3.29) | 0.26 | 1.83 |  | 282.88c | 150.48c |
| ADHD symptoms (SNAP-IV) | (N=106) | (N=88) |  |  |  | (N=67) | (N=65) |  |  |  |  |  |
| Inattention | 16.11 (5.19) | 13.4 (5.83) | -0.49 | -4.11c |  | 6.02 (4.6) | 4.95 (4.47) | -0.24 | -1.74 |  | 169.48c | 92.69c |
| Hyperactivity/impulsivity | 11.87 (5.92) | 6.36 (5.73) | -0.94 | -9.08c |  | 3.68 (3.85) | 2.11 (3.39) | -0.43 | -3.04b |  | 99.7c | 33.86c |
| Oppositional behavior | 9.74 (5.64) | 6.91 (5.81) | -0.49 | -5.51c |  | 4.11 (3.49) | 2.52 (3.23) | -0.47 | -2.89b |  | 53c | 32.94c |
| Adolescent  |  |  |  |  |  |  |  |  |  |  |  |  |
| Autistic symptoms (SRS) | (N=48) | (N=43) |  |  |  | (N=38) | (N=32) |  |  |  |  |  |
| Social communication | 43.63 (13.75) | 38.4 (14.68) | -0.37 | -2.23a |  | 9.44 (7.4) | 9.82 (8.64) | 0.05 | 0.11 |  | 162.28c | 96.2c |
| Stereotyped behavior | 22.5 (6.79) | 19.43 (8.26) | -0.41 | -2.8a |  | 4.58 (4.73) | 4.97 (4.84) | 0.08 | -0.03 |  | 213.67c | 67.09c |
| Social awareness | 21.92 (4.25) | 21.84 (4.36) | -0.02 | 0.1 |  | 12 (5.71) | 12.16 (6.72) | 0.03 | 0.11 |  | 105.35c | 49.05c |
| Social emotion | 14.71 (4.33) | 13.51 (5.2) | -0.25 | -1.16 |  | 4 (3.54) | 4.23 (3.37) | 0.07 | -0.15 |  | 164.61c | 66.53c |
| ADHD symptoms (SNAP-IV) | (N=48) | (N=39) |  |  |  | (N=38) | (N=30) |  |  |  |  |  |
| Inattention | 15.96 (6.73) | 13.23 (7) | -0.40 | -2.68a |  | 4.58 (5.1) | 2.59 (2.9) | -0.47 | -1.61 |  | 95.02c | 47.42c |
| Hyperactivity/impulsivity | 8.83 (6.65) | 6.79 (5.03) | -0.34 | -2.32a |  | 1.89 (2.79) | 0.5 (0.9) | -0.64 | -2.28a |  | 28.39c | 43.94c |
| Oppositional behavior | 9.44 (6.69) | 8.36 (6.98) | -0.16 | -0.94 |  | 2.89 (4.22) | 1.3 (2.07) | -0.46 | -2.21a |  | 30.24c | 24.98c |

Note. ASD: autism spectrum disorder; TD: typically developing controls; SD: standard deviation; SRS: social responsiveness scale; SNAP-IV: The Chinese Version of the Swanson, Nolan, and Pelham Rating Scale, version IV

\* Paired t test. # adjusting for age in the child group comparisons and Time 2 adolescent group comparison; a p < 0.05; b p < 0.01; c p < 0.001.

Table S2-1. Group comparisons of ADHD, Oppositional and autistic symptoms (SRS) symptoms (without matching)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | ASD |  | TD |  | Group comparisons# |
| Mean (SD) | Time 1 | Time 2 | *Time 2 vs Time 1* |  | Time 1 | Time 2 | *Time 2 vs Time 1* |  | *Time 1* | *Time 2* |
| Cohen *d* | *t\** |  | Cohen *d* | *t\** |  | F (p) |
| Autistic symptoms (SRS) | (N=221) | (N=190) |  |  |  | (N=154) | (N=147) |  |  |  |  |  |
| Social communication | 37.32 (14.36) | 33.96 (14.31) | -0.23 | -3.51c |  | 9.79 (7.63) | 9.54 (9.24) | -0.03 | -0.04 |  | 491.7c | 298.97c |
| Stereotyped behavior | 19 (7.31) | 17.49 (7.2) | -0.21 | -3.34b |  | 4.46 (4.24) | 4.39 (4.75) | -0.02 | -0.31 |  | 530.19c | 339.41c |
| Social awareness | 20.91 (4.8) | 20.54 (4.76) | -0.08 | -1.08 |  | 12.04 (5.75) | 11.46 (5.99) | -0.10 | -1.11 |  | 253.74c | 216.39c |
| Social emotion | 11.9 (4.56) | 11.95 (4.69) | 0.01 | -0.10 |  | 3.92 (3.1) | 4.06 (3.45) | 0.04 | 0.65 |  | 395.82c | 271.43c |
| ADHD symptoms (SNAP-IV) | (N=221) | (N=178) |  |  |  | (N=169) | (N=143) |  |  |  |  |  |
| Inattention | 15.09 (6.36) | 12.63 (6.24) | -0.39 | -5.24c |  | 5.63 (4.9) | 4.17 (4.16) | -0.32 | -3.05b |  | 224.15c | 176.62c |
| Hyperactivity/impulsivity | 10.43 (6.61) | 6.36 (5.45) | -0.67 | -9.15c |  | 3.01 (3.38) | 1.53 (2.88) | -0.47 | -5.16c |  | 128.2c | 81.9c |
| Oppositional behavior | 9.12 (6.04) | 7.04 (5.84) | -0.35 | -5.17c |  | 3.6 (3.74) | 2.07 (2.81) | -0.46 | -4.37c |  | 90.92c | 81.73c |

Note, ASD: autism spectrum disorder; TD: typically developing controls; SD: standard deviation; SRS: social responsiveness scale; SNAP-IV: The Chinese Version of the Swanson, Nolan, and Pelham Rating Scale, version IV. \* Paired t test. #adjusting for age and sex; a p < 0.05; b p < 0.01; c p < 0.001.

Table S2-2. Group comparisons of ADHD, Oppositional and autistic symptoms (SRS) symptoms (matching for age)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | ASD |  | TD |  | Group comparisons# |
| Mean (SD) | Time 1 | Time 2 | *Time 2 vs Time 1* |  | Time 1 | Time 2 | *Time 2 vs Time 1* |  | *Time 1* | *Time 2* |
| Cohen *d* | *t\** |  | Cohen *d* | *t\** |  | F (p) |
| Autistic symptoms (SRS) | (N=194) | (N=173) |  |  |  | (N=130) | (N=118) |  |  |  |  |  |
| Social communication | 39.2 (13.04) | 34.95 (14.18) | -0.31 | -3.97c |  | 9.14 (6.51) | 9.42 (9.2) | 0.04 | 0.37 |  | 560.62c | 285.27c |
| Stereotyped behavior | 20.02 (6.63) | 17.94 (7.26) | -0.30 | -4.03c |  | 4.13 (3.91) | 4.36 (4.57) | 0.05 | 0.27 |  | 578.48c | 314.22c |
| Social awareness | 21.24 (4.36) | 20.69 (4.59) | -0.12 | -1.54 |  | 12.25 (5.59) | 11.34 (6.1) | -0.16 | -1.27 |  | 249.33c | 210.03c |
| Social emotion | 12.49 (4.16) | 12.3 (4.64) | -0.04 | -0.31 |  | 3.67 (2.92) | 4.07 (3.34) | 0.13 | 1.05 |  | 418.91c | 265.33c |
| ADHD symptoms (SNAP-IV) | (N=194) | (N=161) |  |  |  | (N=132) | (N=118) |  |  |  |  |  |
| Inattention | 15.69 (5.93) | 13.07 (6.16) | -0.43 | -5.64c |  | 5.41 (4.7) | 4.16 (4.31) | -0.28 | -2.54a |  | 243.41c | 171.47c |
| Hyperactivity/impulsivity | 10.76 (6.52) | 6.56 (5.59) | -0.69 | -8.98c |  | 2.98 (3.5) | 1.54 (2.89) | -0.45 | -4.42c |  | 133.92c | 72.09c |
| Oppositional behavior | 9.44 (5.95) | 7.17 (5.94) | -0.38 | -5.44c |  | 3.57 (3.7) | 2.12 (2.83) | -0.44 | -4.12c |  | 81.91c | 68.89c |

Note, ASD: autism spectrum disorder; TD: typically developing controls; SD: standard deviation; SRS: social responsiveness scale; SNAP-IV: The Chinese Version of the Swanson, Nolan, and Pelham Rating Scale, version IV. \* Paired t test. #adjusting for sex; a p < 0.05; b p < 0.01; c p < 0.001.

Table S2-3. Group comparisons of ADHD, Oppositional and autistic symptoms (SRS) symptoms (matching for age and sex and deleting individuals with age > 20 at Time 1)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | ASD |  | TD |  | Group comparisons# |
| Mean (SD) | Time 1 | Time 2 | *Time 2 vs Time 1* |  | Time 1 | Time 2 | *Time 2 vs Time 1* |  | *Time 1* | *Time 2* |
| Cohen *d* | *t\** |  | Cohen *d* | *t\** |  | F (p) |
| Autistic symptoms (SRS) | (N=154) | (N=135) |  |  |  | (N=103) | (N=96) |  |  |  |  |  |
| Social communication | 39.05 (13.07) | 35.75 (14.02) | -0.24 | -2.92b |  | 9 (6.61) | 9.57 (9.16) | 0.07 | 0.69 |  | 464.64c | 243.65c |
| Stereotyped behavior | 19.97 (6.75) | 18.3 (7.11) | -0.24 | -3.14b |  | 3.99 (3.96) | 4.37 (4.61) | 0.09 | 0.58 |  | 468.29c | 268.26c |
| Social awareness | 21.03 (4.4) | 20.92 (4.73) | -0.02 | -0.64 |  | 12.28 (5.71) | 11.66 (6.34) | -0.10 | -0.84 |  | 191.43c | 152.01c |
| Social emotion | 12.67 (4.14) | 12.7 (4.73) | 0.01 | 0.08 |  | 3.48 (2.83) | 4.02 (3.31) | 0.18 | 1.28 |  | 386.68c | 226.37c |
| ADHD symptoms (SNAP-IV) | (N=154) | (N=127) |  |  |  | (N=105) | (N=95) |  |  |  |  |  |
| Inattention | 16.06 (5.69) | 13.35 (6.19) | -0.46 | -4.92c |  | 5.5 (4.81) | 4.21 (4.17) | -0.29 | -2.35a |  | 243.41c | 152.6c |
| Hyperactivity/impulsivity | 10.92 (6.3) | 6.49 (5.51) | -0.74 | -8.53c |  | 3.03 (3.59) | 1.6 (2.94) | -0.43 | -3.72c |  | 133.92c | 67.11c |
| Oppositional behavior | 9.64 (5.97) | 7.36 (6.2) | -0.38 | -4.84c |  | 3.66 (3.79) | 2.14 (2.96) | -0.44 | -3.65c |  | 81.91c | 57.05c |

Note. ASD: autism spectrum disorder; TD: typically developing controls; SD: standard deviation; SRS: social responsiveness scale; SNAP-IV: The Chinese Version of the Swanson, Nolan, and Pelham Rating Scale, version IV. \* Paired t test. #adjusting for age at Time 2 group comparison; a p < 0.05; b p < 0.01; c p < 0.001.

Table S3-1. Group comparisons of the indices of Connor’s Continuous Performance Test (childhood)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | ASD (n= 106) |  | TD (n=67) |  | Group comparisons*#* |
| Mean (SD) | Time 1 | Time 2 | *Time 2 vs Time 1* |  | Time 1 | Time 2 | *Time 2 vs Time 1* |  | *Time 1* | *Time 2* |
| Cohen *d* | *t(105)\** |  | Cohen *d* | *t*(*66*)*\** |  | F (p) |
| Omissions | 18.28 (21.67) | 6.88 (11.39) | -0.66 | -5.57c |  | 8.76 (11.32) | 2 (2.98) | -0.82 | -5.06c |  | 11.02b | 10.16c |
| Commissions | 24.76 (7.71) | 19.03 (8.08) | -0.73 | -6.11c |  | 22.96 (7.64) | 14.55 (7.59) | -1.10 | -8.4c |  | 2.28 | 12.36c |
| Hit reaction time (Hit RT) | 451.14 (122.89) | 352.74 (78.92) | -0.95 | -10.18c |  | 399.48 (69.83) | 352.11 (54.46) | -0.76 | -6.17c |  | 9.82b | 0.00 |
| Hit RT standard error (Hit RTSE) | 14.41 (8.77) | 7.59 (4.81) | -0.96 | -8.54c |  | 10.33 (5.81) | 5.03 (1.87) | -1.23 | -8.18c |  | 11.30c | 15.67c |
| Variability | 28.12 (19.94) | 14.06 (12.03) | -0.85 | -6.74c |  | 21.56 (17.88) | 6.52 (4.69) | -1.15 | -7.15c |  | 4.8a | 21.90c |
| Detectability | 0.26 (0.33) | 0.54 (0.36) | 0.81 | 7.05c |  | 0.33 (0.32) | 0.68 (0.38) | 1.00 | 7.6c |  | 2.08 | 5.25a |
| Response style  | 0.82 (0.78) | 0.51 (0.47) | -0.48 | -3.7a |  | 0.53 (0.31) | 0.52 (0.59) | -0.02 | -0.03 |  | 8.65b | 0.03 |
| Perseverations | 13.55 (13.76) | 4.81 (7.21) | -0.80 | -5.64c |  | 7.57 (9.57) | 1.79 (3.89) | -0.79 | -5.31c |  | 9.68b | 10.20b |
| Hit RT standard error changed by block (RTSEBC) | 0.07 (0.11) | 0.04 (0.11) | -0.27 | -1.88 |  | 0.07 (0.11) | 0.02 (0.07) | -0.54 | -3.44b |  | 0.06 | 3.39 |
| Hit standard error changed by ISI (RTSEISI) | 0.13 (0.17) | 0.07 (0.17) | -0.35 | -3.15c |  | 0.12 (0.17) | 0.01 (0.1) | -0.79 | -5.16c |  | 0.40 | 7.64b |

Note. ASD: autism spectrum disorder; TD: typically developing controls; SD: standard deviation. \* Paired t test. #adjusting for age in group comparisons; a p < 0.05; b p < 0.01; c p < 0.001.

Table S3-2. Group comparisons of the indices of Connor’s Continuous Performance Test (adolescence)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | ASD (n= 48) |  | TD (n=39) |  | Group comparisons |
| Mean (SD) | Time 1 | Time 2 | *Time 2 vs Time 1* |  | Time 1 | Time 2 | *Time 2 vs Time 1* |  | *Time 1* | *Time 2#* |
| Cohen *d* | *t(47)\** |  | Cohen *d* | *t*(*38*)*\** |  | F (p) |
| Omissions | 7.19 (10.98) | 5.1 (10.32) | -0.20 | -1.57 |  | 2.87 (3.22) | 0.64 (0.99) | -0.94 | -4.32c |  | 5.62a | 5.22a |
| Commissions | 20.52 (9.75) | 17.17 (9.34) | -0.35 | -2.82b |  | 15.64 (6.61) | 9.31 (6.66) | -0.95 | -6.17c |  | 7.11b | 18.12c |
| Hit reaction time (RT) | 355.97 (76.8) | 340.72 (65.9) | -0.21 | -1.67 |  | 363.86 (60.87) | 373.27 (67.59) | 0.15 | 1.05 |  | 0.27 | 4.38a |
| Hit RT standard error (Hit RTSE) | 7.73 (6.29) | 6.02 (5.36) | -0.29 | -2.14a |  | 5.67 (2.67) | 4.95 (1.92) | -0.31 | -1.69 |  | 3.65 | 1.82 |
| Variability | 14.67 (17.3) | 11.61 (18.19) | -0.17 | -1.25 |  | 8.25 (6.44) | 6.06 (3.18) | -0.43 | -2.09a |  | 4.83a | 3.81 |
| Detectability | 0.52 (0.47) | 0.6 (0.51) | 0.16 | 1.17 |  | 0.59 (0.32) | 1.02 (0.43) | 1.13 | 5.87c |  | 0.56 | 14.2c |
| Response style  | 0.57 (0.52) | 0.5 (0.41) | -0.15 | -0.85 |  | 0.48 (0.51) | 0.53 (0.58) | 0.09 | 0.52 |  | 0.6 | 0.3 |
| Perseverations | 7.38 (11.5) | 2.96 (5.79) | -0.49 | -2.46a |  | 0.82 (1.59) | 0.33 (0.74) | -0.40 | -1.86 |  | 12.45c | 6.86a |
| Hit RT standard error changed by block (RTSEBC) | 0.07 (0.09) | 0.03 (0.11) | -0.40 | -2.02a |  | 0.04 (0.06) | 0.03 (0.06) | -0.17 | -1.2 |  | 2.07 | 0.01 |
| Hit standard error changed by ISI (RTSEBCISI) | 0.01 (0.16) | 0 (0.16) | -0.06 | -0.55 |  | 0.05 (0.15) | 0.01 (0.1) | -0.31 | -1.67 |  | 1.52 | 0.04 |

Note. ASD: autism spectrum disorder; TD: typically developing controls; SD: standard deviation; SRS: social responsiveness scale. \* Paired t test. #adjusting for age at Time 2 group comparison; a p < 0.05; b p < 0.01; c p < 0.001.

Table S4-1 Slope and Group \* Time interaction (childhood)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | ASD |  | TD |  | Main effects | Interaction |
| *β* (95% CI) |  | *β* (95% CI) |  | Group | Time | Group\* Time |
| F statistics (p) |
| Autistic symptoms (SRS) |  |  |  |  |  |   |  |
| Social communication | -2.41 (-4.69, -0.14) |  | 0.83 (-1.88, 3.54) |  | 105.73 (<.0001) | 0.78 (0.32) | 3.28 (0.07) |
| Stereotyped behavior | -1.2 (-2.42, 0.02) |  | 0.42 (-1.03, 1.88) |  | 104.3 (<.0001) | 0.65 (0.42) | 2.87 (0.09) |
| Social awareness | -0.07 (-1.38, 1.24) |  | -1.04 (-2.62, 0.53) |  | 17.67 (<.0001) | 1.15 (0.29) | 0.88 (0.35) |
| Social emotion | 0.45 (-0.34, 1.24) |  | 0.74 (-0.21, 1.69) |  | 68.21 (<.0001) | 3.61 (0.06) | 0.22 (0.64) |
| ADHD symptoms (SNAP-IV) |  |  |  |  |  |  |  |
| Inattention | -2.72 (-3.86, -1.58) |  | -1.02 (-2.38, 0.33) |  | 61.13 (<.0001) | 17.52 (<.0001) | 3.59 (0.06) |
| Hyperactivity/impulsivity  | -5.42 (-6.45, -4.39) |  | -1.57 (-2.8, -0.35) |  | 82.61 (<.0001) | 74.5 (<.0001) | 22.57 (<.0001) |
| Oppositional behavior | -2.82 (-3.75, -1.89) |  | -1.52 (-2.62, -0.41) |  | 30.98 (<.0001) | 35.29 (<.0001) | 3.18 (0.08) |
| CCPT |  |  |  |  |  |  |  |
| Omissions | -11.79 (-15.54, -8.04) |  | -6.76 (-11.22, -2.3) |  | 8.78 (<.0001) | 39.51 (<.0001) | 2.9 (0.09) |
| Commissions | -5.92 (-7.81, -4.04) |  | -8.4 (-10.63, -6.18) |  | 0.08 (0.78) | 94.41 (<.0001) | 2.83 (0.09) |
| Hit reaction time (Hit RT) | -102.8 (-120.97, -84.64) |  | -47.37 (-68.62, -26.12) |  | 16.51 (<.0001) | 112.63 (<.0001) | **15.35 (<.0001)** |
| Hit RT standard error (Hit RTSE) | -7.2 (-8.71, -5.7) |  | -5.3 (-7.08, -3.52) |  | 8.32 (<.0001) | 112.46 (<.0001) | 2.59 (0.11) |
| Variability | -14.93 (-19, -10.86) |  | -15.05 (-19.89, -10.2) |  | 1.3 (0.26) | 87.61 (<.0001) | 0 (0.97) |
| Detectability (d’) | 0.3 (0.22, 0.38) |  | 0.35 (0.25, 0.44) |  | 0.06 (0.81) | 102.66 (<.0001) | 0.62 (0.43) |
| Response style  | -0.3 (-0.45, -0.14) |  | 0 (-0.18, 0.18) |  | 7.79 (0.01) | 6.25 (0.01) | **6.06 (0.01)** |
| Perseverations | -9.53 (-12.22, -6.85) |  | -5.78 (-8.99, -2.56) |  | 9.17 (<.0001) | 52.2 (<.0001) | 3.14 (0.08) |
| Hit RT standard error changed by block (RTSEBC) | -0.04 (-0.07, -0.01) |  | -0.05 (-0.09, -0.02) |  | 0.14 (0.71) | 16.86 (<.0001) | 0.55 (0.46) |
| Hit standard error changed by ISI (RTSEISI) | -0.08 (-0.12, -0.03) |  | -0.11 (-0.16, -0.06) |  | 0.06 (0.81) | 32.19 (<.0001) | 1.05 (0.31) |

Note. ASD: autism spectrum disorder; TD: typically developing controls; CCPT: Connor’s Continuous Performance Test; SRS: Social Responsiveness Scale; SNAP-IV: The Chinese Version of the Swanson, Nolan, and Pelham Rating Scale, version IV. # using proc mixed to control for repeated measures and adjusting for duration of follow up; a p < 0.05; b p < 0.01; c p < 0.001.

Table S4-2 Slope and Group \* Time interaction (adolescence)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | ASD |  | TD |  | Main effects | Interaction |
| *β* (95% CI) |  | *β* (95% CI) |  | Group | Time | Group\* Time |
| F statistics (p) |
| Autistic symptoms (SRS) |  |  |  |  |  |  |  |
| Social communication | -3.52 (-7.13, 0.09) |  | 0.3 (-3.82, 4.42) |  | 64.52 (<.0001) | 1.38 (0.25) | 1.93 (0.17) |
| Unique mannerism | -2.37 (-4.28, -0.46) |  | 0.17 (-2, 2.35) |  | 63.05 (<.0001) | 2.29 (0.13) | 3.08 (0.08) |
| Social awareness | 0.19 (-1.75, 2.14) |  | 0.16 (-2.04, 2.37) |  | 17.16 (<.0001) | 0.06 (0.81) | 0 (0.98) |
| Social emotion | -0.49 (-1.86, 0.89) |  | 0.09 (-1.47, 1.66) |  | 39.76 (<.0001) | 0.14 (0.71) | 0.31 (0.58) |
| ADHD symptoms (SNAP-IV) |  |  |  |  |  |  |
| Inattention | -2.62 (-4.31, -0.94) |  | -1.6 (-3.53, 0.34) |  | 30.54 (<.0001) | 10.81 (<.0001) | 0.64 (0.43) |
| Hyperactivity/impulsivity  | -2.06 (-3.54, -0.57) |  | -1.31 (-3.01, 0.39) |  | 18.63 (<.0001) | 8.88 (<.0001) | 0.43 (0.51) |
| Oppositional behavior | -0.96 (-2.63, 0.71) |  | -1.84 (-3.75, 0.08) |  | 8.43 (<.0001) | 4.82 (0.03) | 0.48 (0.49) |
| CCPT |  |  |  |  |  |  |  |
| Omissions | -2.5 (-4.77, -0.23) |  | -2.23 (-4.54, 0.08) |  | 1.82 (0.18) | 8.46 (<.0001) | 0.03 (0.87) |
| Commissions | -2.52 (-4.81, -0.24) |  | -6.33 (-8.66, -4.01) |  | 0.14 (0.71) | 29.26 (<.0001) | **5.42 (0.02)** |
| Hit reaction time (Hit RT) | -17.84 (-36.66, 0.99) |  | 9.4 (-9.77, 28.58) |  | 0.19 (0.66) | 0.39 (0.53) | 4.08 (0.05) |
| Hit RT standard error (Hit RTSE) | -1.57 (-3.02, -0.12) |  | -0.72 (-2.2, 0.77) |  | 1.89 (0.17) | 4.81 (0.03) | 0.67 (0.42) |
| Variability | -2.52 (-6.86, 1.82) |  | -2.19 (-6.64, 2.25) |  | 1.12 (0.29) | 2.28 (0.13) | 0.01 (0.92) |
| Detectability (d’) | 0.06 (-0.09, 0.2) |  | 0.43 (0.29, 0.58) |  | 2.78 (0.1) | 22.34 (<.0001) | **13.24 (<.0001)** |
| Response style  | -0.1 (-0.27, 0.07) |  | 0.05 (-0.12, 0.23) |  | 1.29 (0.26) | 0.17 (0.68) | 1.58 (0.21) |
| Perseverations | -4.42 (-7.37, -1.47) |  | -0.49 (-3.58, 2.61) |  | 8.84 (<.0001) | 5.23 (0.02) | 3.36 (0.07) |
| Hit RT standard error changed by block (RTSEBC) | -0.04 (-0.07, -0.005) |  | -0.01 (-0.05, 0.02) |  | 1.38 (0.24) | 4.97 (0.03) | 0.91 (0.34) |
| Hit standard error changed by ISI (RTSEISI) | -0.01 (-0.06, 0.04) |  | -0.04 (-0.1, 0.01) |  | 1.07 (0.3) | 2.24 (0.14) | 0.67 (0.42) |

Note. ASD: autism spectrum disorder; TD: typically developing controls; CCPT: Connor’s Continuous Performance Test; SRS: Social Responsiveness Scale; SNAP-IV: The Chinese Version of the Swanson, Nolan, and Pelham Rating Scale, version IV. # using proc mixed to control for repeated measure and adjusting for duration of follow up; a p < 0.05; b p < 0.01; c p < 0.001.

Table S5-1. Group comparisons of the indices of Connor’s Continuous Performance Test (without matching)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | ASD (n= 221) |  | TD (n=182) |  | Group comparisons# |
| Mean (SD) | Time 1 | Time 2 | *Time 2 vs Time 1* |  | Time 1 | Time 2 | *Time 2 vs Time 1* |  | *Time 1* | *Time 2* |
| Cohen *d* | *t(157)\** |  | Cohen *d* | *t*(*125*)*\** |  | F (p) |
| Omissions | 14.52 (19.03) | 6.47 (12.08) | -0.51 | -6.48c |  | 5.12 (8.3) | 1.36 (2.31) | -0.62 | -6.35c |  | 34.08c | 31.47c |
| Commissions | 22.78 (8.44) | 17.81 (8.48) | -0.59 | -8.27c |  | 18.64 (8.47) | 11.85 (7.21) | -0.86 | -11.56c |  | 19.34c | 50.06c |
| Hit reaction time (Hit RT) | 419.64 (114.29) | 353.21 (76.26) | -0.68 | -9.93c |  | 374.66 (65.25) | 356.01 (52.14) | -0.32 | -3.98c |  | 22.07c | 0.02 |
| Hit RT standard error (Hit RT SE) | 11.98 (8.21) | 7 (4.89) | -0.74 | -9.99c |  | 7.4 (4.71) | 4.77 (1.65) | -0.75 | -8.06c |  | 40.32c | 34.41c |
| Variability | 23.02 (19.1) | 12.95 (13.95) | -0.60 | -7.74c |  | 13.52 (13.84) | 5.97 (3.62) | -0.75 | -7.63c |  | 26.27c | 44.12c |
| Detectability (d’) | 0.37 (0.38) | 0.59 (0.41) | 0.56 | 7.65c |  | 0.51 (0.4) | 0.83 (0.42) | 0.78 | 9.56c |  | 9.31 | 27.79c |
| Response style  | 0.71 (0.64) | 0.55 (0.55) | -0.27 | -3.14b |  | 0.5 (0.43) | 0.5 (0.55) | 0.00 | 0.01 |  | 16.78b | 0.79 |
| Perseverations | 10.72 (13.27) | 3.86 (6.6) | -0.65 | -7.19c |  | 3.93 (7.58) | 0.85 (2.52) | -0.55 | -5.92c |  | 33.07c | 29.12c |
| Hit RT standard error changed by block (RTSEBC) | 0.06 (0.1) | 0.04 (0.11) | -0.19 | -2.06a |  | 0.05 (0.09) | 0.02 (0.07) | -0.37 | -3.31b |  | 1.65 | 6.03a |
| Hit standard error changed by ISI (RTSEISI) | 0.1 (0.17) | 0.04 (0.16) | -0.36 | -4.40c |  | 0.07 (0.15) | 0.02 (0.09) | -0.40 | -4.21c |  | 1.94 | 2.11 |

Note, ASD: autism spectrum disorder; TD: typically developing controls; CCPT: Connor’s Continuous Performance Test; SRS: Social Responsiveness Scale; SNAP-IV: The Chinese Version of the Swanson, Nolan, and Pelham Rating Scale, version IV.SD: standard deviation; SRS: social responsiveness scale. \* Paired t test. # adjusting for age and sex; a p < 0.05; b p < 0.01; c p < 0.001.

Table S5-2 Slope and Group\*Time interaction (without matching)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | ASD |  | TD |  | Main effects | Interaction | Group Comparison |
| *β* (95% CI) |  | *β* (95% CI) |  | Group | Time | Group\* Time | Cohen’s d |
| F statistics (p) | Time 1 | Time 2 |
| Autistic symptoms (SRS) |  |  |  |  |  |  |  |  |  |
| Social communication | -3.29 (-4.97, -1.61) |  | -0.14 (-2.12, 1.83) |  | 170.96 (<.0001) | 6.77 (0.01) | 5.69 (0.02) | 2.28 | 1.98 |
| Stereotyped behavior | -1.59 (-2.46, -0.71) |  | -0.1 (-1.13, 0.93) |  | 169.2 (<.0001) | 5.97 (0.02) | 4.65 (0.03) | 2.33 | 2.10 |
| Social awareness | -0.36 (-1.25, 0.52) |  | -0.62 (-1.66, 0.42) |  | 53.49 (<.0001) | 2.02 (0.16) | 0.14 (0.71) | 1.70 | 1.70 |
| Social emotion | 0.02 (-0.57, 0.6) |  | 0.18 (-0.51, 0.87) |  | 103.74 (<.0001) | 0.19 (0.67) | 0.13 (0.72) | 1.98 | 1.88 |
| ADHD symptoms (SNAP-IV) |  |  |  |  |  |  |  |  |
| Inattention | -2.38 (-3.17, -1.6) |  | -1.33 (-2.22, -0.44) |  | 99.99 (<.0001) | 37.78 (<.0001) | 3.08 (0.08) | 1.64 | 1.56 |
| Hyperactivity/impulsivity  | -4 (-4.71, -3.29) |  | -1.49 (-2.3, -0.68) |  | 112.4 (<.0001) | 100.21 (<.0001) | **20.95 (<.0001)** | 1.36 | 1.08 |
| Oppositional behavior | -2.02 (-2.69, -1.34) |  | -1.54 (-2.31, -0.76) |  | 48.29 (<.0001) | 46.42 (<.0001) | 0.85 (0.36) | 1.07 | 1.05 |
| CCPT |  |  |  |  |  |  |  |  |  |
| Omissions | -8.05 (-10, -6.11) |  | -3.76 (-5.9, -1.62) |  | 26.78 (<.0001) | 64.38 (<.0001) | **8.52 (<.0001)** | 0.62 | 0.56 |
| Commissions | -4.98 (-6.1, -3.85) |  | -6.79 (-8.03, -5.55) |  | 1.51 (0.22) | 191.4 (<.0001) | **4.55 (0.03)** | 0.49 | 0.75 |
| Hit reaction time (Hit RT) | -66.43 (-77.67, -55.19) |  | -18.65 (-31.04, -6.27) |  | 33.45 (<.0001) | 100.02 (<.0001) | **31.53 (<.0001)** | 0.47 | -0.04 |
| Hit RT standard error (Hit RT SE) | -4.98 (-5.8, -4.15) |  | -2.62 (-3.53, -1.72) |  | 35.54 (<.0001) | 148.67 (<.0001) | **14.25 (<.0001)** | 0.67 | 0.59 |
| Variability | -10.07 (-12.3, -7.83) |  | -7.55 (-10.01, -5.09) |  | 14.75 (<.0001) | 108.42 (<.0001) | 2.22 (0.14) | 0.56 | 0.66 |
| Detectability (d’) | 0.22 (0.16, 0.28) |  | 0.32 (0.25, 0.38) |  | 0.12 (0.73) | 150.73 (<.0001) | **4.68 (0.03)** | -0.36 | -0.58 |
| Response style  | -0.17 (-0.26, -0.07) |  | 0.001 (-0.1, 0.11) |  | 10.02 (<.0001) | 5.26 (0.02) | **5.33 (0.02)** | 0.38 | 0.09 |
| Perseverations | -6.86 (-8.38, -5.33) |  | -3.08 (-4.76, -1.4) |  | 30.11 (<.0001) | 74.34 (<.0001) | **10.72 (<.0001)** | 0.61 | 0.58 |
| Hit RT standard error changed by block (RTSEBC) | -0.02 (-0.04, -0.002) |  | -0.03 (-0.05, -0.01) |  | 0.5 (0.48) | 12.74 (<.0001) | 0.31 (0.58) | 0.10 | 0.21 |
| Hit standard error changed by ISI (RTSEISI) | -0.06 (-0.09, -0.04) |  | -0.05 (-0.08, -0.02) |  | 1.93 (0.17) | 35.37 (<.0001) | 0.29 (0.59) | 0.19 | 0.15 |

Note, ASD: autism spectrum disorder; TD: typically developing controls; CCPT: Connor’s Continuous Performance Test; SRS: Social Responsiveness Scale; SNAP-IV: The Chinese Version of the Swanson, Nolan, and Pelham Rating Scale, version IV.  # using a mixed model to control for repeated measure and adjusting for duration of follow up and sex.

Table S6-1. Group comparisons of the indices of Connor’s Continuous Performance Test (matching for age)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | ASD (n= 194) |  | TD (n=133) |  | Group comparisons# |
| Mean (SD) | Time 1 | Time 2 | *Time 2 vs Time 1* |  | Time 1 | Time 2 | *Time 2 vs Time 1* |  | *Time 1* | *Time 2* |
| Cohen *d* | *t(157)\** |  | Cohen *d* | *t*(*125*)*\** |  | F (p) |
| Omissions | 14.72 (19.34) | 7.01 (12.75) | -0.47 | -5.69c |  | 5.75 (8.87) | 1.32 (2.33) | -0.68 | -6.07c |  | 23.1c | 27.35c |
| Commissions | 22.74 (8.52) | 17.98 (8.48) | -0.56 | -7.46c |  | 19.6 (8.3) | 12.51 (7.55) | -0.89 | -10.19c |  | 8.87c | 35.63c |
| Hit reaction time (Hit RT) | 420.14 (115.77) | 354.52 (76.05) | -0.67 | -9.23c |  | 380.07 (67.35) | 356.19 (55.77) | -0.39 | -4.18c |  | 13.27c | 0.3 |
| Hit RT standard error (Hit RT SE) | 12.1 (8.39) | 7.16 (5.02) | -0.71 | -9.05c |  | 7.86 (5.06) | 4.86 (1.7) | -0.79 | -7.30c |  | 24.6c | 23.94c |
| Variability | 23.27 (19.48) | 13.36 (14.28) | -0.58 | -6.92c |  | 14.69 (14.98) | 6.01 (3.81) | -0.79 | -6.95c |  | 15.63c | 32.74c |
| Detectability (d’) | 0.38 (0.38) | 0.58 (0.41) | 0.51 | 6.71c |  | 0.47 (0.38) | 0.8 (0.42) | 0.82 | 8.90c |  | 3.26 | 20.76c |
| Responsive style  | 0.72 (0.63) | 0.56 (0.56) | -0.27 | -2.75b |  | 0.51 (0.42) | 0.49 (0.54) | -0.04 | -0.41 |  | 13.81c | 0.95 |
| Perseverations | 10.77 (13.61) | 4.01 (6.9) | -0.63 | -6.43c |  | 4.5 (8.15) | 0.99 (2.84) | -0.58 | -5.42c |  | 20.82c | 21.57c |
| Hit RT standard error changed by block (RTSEBC) | 0.06 (0.1) | 0.04 (0.11) | -0.19 | -2.01a |  | 0.05 (0.09) | 0.02 (0.07) | -0.37 | -3.74c |  | 0.24 | 2.15 |
| Hit standard error changed by ISI (RTSEISI) | 0.1 (0.17) | 0.04 (0.16) | -0.36 | -3.95b |  | 0.07 (0.16) | 0.01 (0.1) | -0.45 | -3.99c |  | 1.69 | 3.66 |

Note, ASD: autism spectrum disorder; TD: typically developing controls; CCPT: Connor’s Continuous Performance Test; SRS: Social Responsiveness Scale; SNAP-IV: The Chinese Version of the Swanson, Nolan, and Pelham Rating Scale, version IV.SD: standard deviation; SRS: social responsiveness scale. \*Paired t test. #adjusting for sex; a p < 0.05; b p < 0.01; c p < 0.001.

Table S6-2 Slope and Group\*Time interaction (matching for age)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | ASD |  | TD |  | Main effects | Interaction | Group Comparison |
| *β* (95% CI) |  | *β* (95% CI) |  | Group | Time | Group\* Time | Cohen’s d |
| F statistics (p) | Time 1 | Time 2 |
| Autistic symptoms (SRS) |  |  |  |  |  |  |  |  |  |
| Social communication | -3.75 (-5.56, -1.95) |  | 0.32 (-1.82, 2.45) |  | 193.71 (<.0001) | 5.85 (0.02) | 8.21 (<.0001) | 2.76 | 2.06 |
| Stereotyped behavior | -1.83 (-2.76, -0.91) |  | 0.18 (-0.91, 1.28) |  | 196.35 (<.0001) | 5.14 (0.02) | 7.69 (0.01) | 2.79 | 2.15 |
| Social awareness | -0.31 (-1.27, 0.65) |  | -0.92 (-2.06, 0.22) |  | 43.49 (<.0001) | 2.64 (0.11) | 0.64 (0.42) | 1.84 | 1.78 |
| Social emotion | 0 (-0.63, 0.62) |  | 0.39 (-0.35, 1.13) |  | 119.24 (<.0001) | 0.61 (0.43) | 0.63 (0.43) | 2.38 | 1.98 |
| ADHD symptoms (SNAP-IV) |  |  |  |  |  |  |  |  |
| Inattention | -2.67 (-3.5, -1.84) |  | -1.17 (-2.14, -0.19) |  | 101.28 (<.0001) | 34.99 (<.0001) | 5.36 (0.02) | 1.88 | 1.63 |
| Hyperactivity/impulsivity  | -4.16 (-4.94, -3.38) |  | -1.46 (-2.38, -0.54) |  | 99.67 (<.0001) | 84.41 (<.0001) | 19.48 (<.0001) | 1.41 | 1.08 |
| Oppositional behavior | -2.2 (-2.92, -1.48) |  | -1.53 (-2.38, -0.68) |  | 46.82 (<.0001) | 43.36 (<.0001) | 1.38 (0.24) | 1.14 | 1.04 |
| CCPT |  |  |  |  |  |  |  |  |  |
| Omissions | -7.8 (-10.18, -5.42) |  | -4.43 (-7.12, -1.73) |  | 14.7 (<.0001) | 44.87 (<.0001) | 3.41 (0.07) | 0.56 | 0.57 |
| Commissions | -4.67 (-5.99, -3.35) |  | -7.09 (-8.57, -5.61) |  | 0 (0.97) | 136.35 (<.0001) | **5.76 (0.02)** | 0.37 | 0.67 |
| Hit reaction time (Hit RT) | -70.21 (-83.42, -57) |  | -23.88 (-38.7, -9.05) |  | 20.45 (<.0001) | 86.96 (<.0001) | **21.09 (<.0001)** | 0.40 | -0.02 |
| Hit RT standard error (Hit RT SE) | -5.12 (-6.14, -4.1) |  | -3 (-4.15, -1.85) |  | 19.17 (<.0001) | 107.79 (<.0001) | **7.35 (0.01)** | 0.59 | 0.57 |
| Variability | -10.12 (-12.87, -7.37) |  | -8.68 (-11.81, -5.56) |  | 6.36 (0.01) | 78.97 (<.0001) | 0.46 (0.5) | 0.48 | 0.65 |
| Detectability (d’) | 0.21 (0.14, 0.27) |  | 0.33 (0.26, 0.4) |  | 0.43 (0.51) | 116.63 (<.0001) | **6.14 (0.01)** | -0.24 | -0.53 |
| Response style  | -0.16 (-0.27, -0.06) |  | -0.02 (-0.14, 0.1) |  | 6.93 (0.01) | 5.07 (0.03) | 3.03 (0.08) | 0.38 | 0.13 |
| Perseverations | -7.03 (-8.86, -5.2) |  | -3.51 (-5.6, -1.42) |  | 17.64 (<.0001) | 55.83 (<.0001) | **6.22 (0.01)** | 0.54 | 0.54 |
| Hit RT standard error changed by block RTSEBC) | -0.03 (-0.04, -0.01) |  | -0.04 (-0.06, -0.01) |  | 0 (0.95) | 17.16 (<.0001) | 0.41 (0.52) | 0.10 | 0.21 |
| Hit standard error changed by ISI (RTSEISI) | -0.06 (-0.09, -0.03) |  | -0.06 (-0.09, -0.03) |  | 1.08 (0.3) | 29.82 (<.0001) | 0.06 (0.81) | 0.18 | 0.22 |

Note, ASD: autism spectrum disorder; TD: typically developing controls; ; CCPT: Connor’s Continuous Performance Test; SRS: Social Responsiveness Scale; SNAP-IV: The Chinese Version of the Swanson, Nolan, and Pelham Rating Scale, version IV. # using a mixed model to control for repeated measure and adjusting for duration of follow up and sex.

Table 7-1. Group comparisons of the indices of Connor’s Continuous Performance Test (matching for age and sex and deleting individuals with age > 20)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | ASD (n= 154) |  | TD (n=106) |  | Group comparisons# |
| Mean (SD) | Time 1 | Time 2 | *Time 2 vs Time 1* |  | Time 1 | Time 2 | *Time 2 vs Time 1* |  | *Time 1* | *Time 2* |
| Cohen *d* | *t(153)\** |  | Cohen *d* | *t*(*105*)*\** |  | F (p) |
| Omissions | 14.82 (19.64) | 6.32 (11.06) | -0.53 | -5.64c |  | 6.59 (9.61) | 1.5 (2.52) | -0.72 | -5.73c |  | 15.97c | 22.79c |
| Commissions | 23.44 (8.59) | 18.45 (8.5) | -0.58 | -6.68c |  | 20.26 (8.07) | 12.62 (7.66) | -0.97 | -10.33c |  | 9.02a | 32.62c |
| Hit reaction time (Hit RT) | 421.47 (118.88) | 348.99 (75.1) | -0.73 | -9.22c |  | 386.38 (68.59) | 359.89 (60.19) | -0.41 | -4.12c |  | 7.51a | 2.32 |
| Hit RT standard error (Hit RT SE) | 12.32 (8.64) | 7.1 (5.02) | -0.74 | -8.28c |  | 8.61 (5.38) | 5 (1.88) | -0.90 | -7.42c |  | 15.44c | 14.9c |
| Variability | 23.93 (20.1) | 13.3 (14.22) | -0.61 | -6.35c |  | 16.66 (16.05) | 6.35 (4.19) | -0.88 | -6.85c |  | 9.62b | 21.7c |
| Detectability (d’) | 0.34 (0.39) | 0.56 (0.41) | 0.55 | 6.21c |  | 0.43 (0.34) | 0.81 (0.43) | 0.98 | 9.56c |  | 3.27 | 21.56c |
| Responsive style  | 0.74 (0.72) | 0.51 (0.45) | -0.38 | -3.70c |  | 0.51 (0.4) | 0.53 (0.59) | 0.04 | 0.29 |  | 9.16b | 0.07 |
| Perseverations | 11.62 (13.37) | 4.23 (6.84) | -0.70 | -6.10c |  | 5.08 (8.32) | 1.25 (3.2) | -0.61 | -5.20c |  | 20.01c | 16.33c |
| Hit RT standard error changed by block (RTSEBC) | 0.07 (0.1) | 0.04 (0.11) | -0.29 | -2.61c |  | 0.06 (0.1) | 0.02 (0.07) | -0.46 | -3.59c |  | 0.24 | 0.58 |
| Hit standard error changed by ISI (RTSEISI) | 0.1 (0.17) | 0.05 (0.17) | -0.29 | -3.05b |  | 0.09 (0.16) | 0.01 (0.1) | -0.60 | -5.12c |  | 0.01 | 4.53a |

Note, ASD: autism spectrum disorder; TD: typically developing controls; SD: standard deviation. \*Paired t test. # adjusting for age at Time 2 group comparison; a p < 0.05; b p < 0.01; c p < 0.001.

Table S7-2 Slope and Group\*Time interaction (matching for age and sex and deleting individuals with age > 20)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | ASD |  | TD |  | Main effects | Interaction | Group comparison |
| *β* (95% CI) |  | *β* (95% CI) |  | Group | Time | Group\* Time | Cohen’s d |
| F statistics (p) | Time 1 | Time 2 |
| ADHD symptoms (SNAP-IV) |  |  |  |  |  |  |  |  |
| Inattention | -2.69 (-3.63, -1.76) |  | -1.19 (-2.28, -0.09) |  | 93.55 (<.0001) | 28.18 (<.0001) | 4.25 (0.04) | 1.97 | 1.69 |
| Hyperactivity/impulsivity  | -4.38 (-5.24, -3.52) |  | -1.45 (-2.46, -0.43) |  | 98.89 (<.0001) | 74.6 (<.0001) | 18.93 (<.0001) | 1.47 | 1.07 |
| Oppositional behavior | -2.25 (-3.07, -1.42) |  | -1.59 (-2.56, -0.62) |  | 38.87 (<.0001) | 35.47 (<.0001) | 1.03 (0.31) | 1.15 | 1.03 |
| Autistic symptoms (SRS) |  |  |  |  |  |  |  |  |
| Social communication | -2.76 (-4.67, -0.85) |  | 0.65 (-1.59, 2.9) |  | 169.5 (<.0001) | 1.98 (0.16) | 5.21 (0.02) | 2.74 | 2.14 |
| Unique mannerism | -1.57 (-2.59, -0.55) |  | 0.34 (-0.86, 1.54) |  | 165.48 (<.0001) | 2.35 (0.13) | 5.73 (0.02) | 2.76 | 2.25 |
| Social awareness | 0.01 (-1.08, 1.09) |  | -0.64 (-1.92, 0.63) |  | 33.95 (<.0001) | 0.57 (0.45) | 0.59 (0.44) | 1.76 | 1.70 |
| Social emotion | 0.15 (-0.54, 0.85) |  | 0.52 (-0.29, 1.33) |  | 105.37 (<.0001) | 1.55 (0.21) | 0.45 (0.5) | 2.50 | 2.07 |
| CCPT |  |  |  |  |  |  |  |  |  |
| Omissions | -8.74 (-11.41, -6.06) |  | -5.09 (-8.13, -2.06) |  | 11.28 (<.0001) | 45.42 (<.0001) | 3.16 (0.08) | 0.50 | 0.56 |
| Commissions | -4.9 (-6.38, -3.41) |  | -7.64 (-9.31, -5.97) |  | 0.03 (0.86) | 122.2 (<.0001) | **5.86 (0.02)** | 0.38 | 0.71 |
| Hit reaction time (Hit RT) | -76.35 (-91.2, -61.5) |  | -26.48 (-43.11, -9.85) |  | 15.33 (<.0001) | 82.55 (<.0001) | **19.41 (<.0001)** | 0.35 | -0.16 |
| Hit RT standard error (Hit RT SE) | -5.42 (-6.61, -4.24) |  | -3.62 (-4.95, -2.28) |  | 11.26 (<.0001) | 99.35 (<.0001) | 3.98 (0.05) | 0.50 | 0.52 |
| Variability | -10.94 (-14.16, -7.73) |  | -10.32 (-13.96, -6.67) |  | 3.05 (0.08) | 74.27 (<.0001) | 0.06 (0.8) | 0.39 | 0.62 |
| Detectability (d’) | 0.22 (0.15, 0.3) |  | 0.38 (0.3, 0.46) |  | 0.53 (0.47) | 116.57 (<.0001) | **7.83 (0.01)** | -0.24 | -0.60 |
| Response style  | -0.24 (-0.35, -0.12) |  | 0.02 (-0.12, 0.15) |  | 9.22 (<.0001) | 5.88 (0.02) | **7.91 (0.01)** | 0.38 | -0.04 |
| Perseverations | -7.93 (-10.01, -5.85) |  | -3.83 (-6.21, -1.45) |  | 17.87 (<.0001) | 53.75 (<.0001) | **6.53 (0.01)** | 0.56 | 0.53 |
| Hit RT standard error changed by block (RTSEBC) | -0.04 (-0.06, -0.02) |  | -0.04 (-0.06, -0.02) |  | 0.11 (0.74) | 21.48 (<.0001) | 0.02 (0.89) | 0.10 | 0.21 |
| Hit standard error changed by ISI (RTSEISI) | -0.06 (-0.09, -0.02) |  | -0.08 (-0.12, -0.05) |  | 0.32 (0.57) | 31.22 (<.0001) | 1.35 (0.25) | 0.06 | 0.27 |

Note, ASD: autism spectrum disorder; TD: typically developing controls; SD: standard deviation; CCPT: Connor’s Continuous Performance Test; SRS: Social Responsiveness Scale; SNAP-IV: The Chinese Version of the Swanson, Nolan, and Pelham Rating Scale, version IV. #using a mixed model to control for repeated measure and adjusting for duration of follow up; a p < 0.05; b p < 0.01; c p < 0.001.