Appendix D. Evidence Tables

Tables are sorted by year, then last name of first author.

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| **Table D-1. Interventions for adolescents and young adults with autism evidence table** | | | | |
| **Study**  **Description** | **Intervention** | **Inclusion/Exclusion**  **Criteria/Population** | **Baseline**  **Measures** | **Outcomes** |
| Author:  Garcia-Villamisar et al., 2010  Country:  Spain  Enrollment period:  NR  Funding:  NR  Author industry relationship disclosures:  NR  Design:  RCT | **Intervention:**  Leisure/recreation program including interaction with media, exercise, game playing, and other recreational activities for 2 hrs/day  **Intervention target:**  Quality of life and stress  **Primary outcome:**  NR  **Groups:**  **G1:** leisure program  **G2:** wait list control  **Treatment duration:**  12 months  **Frequency of contact during study:**  Baseline and after 12 months  **Last followup post-treatment:**  Immediately post-treatment  **Measure of treatment fidelity/adherence reported:**  No  **Co-interventions held stable during treatment:**  NR  **Concomitant therapies:** NR  **N at enrollment:**  **G1:** 37  **G2:** 34  N at followup:  **G1:** 37  **G2:** 34 | Inclusion criteria:   * Attendance at day program for adults with special needs * Consent to participate in study   Exclusion criteria:   * See inclusion criteria   **Age, yrs, mean ± SD, (range): G1:** 31.49 ± 4.83 (17-39) **G2:** 30.06 ± 3.44 (24-38)  **Mental age (Leiter), months, mean ± SD: G1:** 63.46 ± 21.33 **G2:** 61.44 ± 9.37  **Gender, n:**  Male:  **G1:** 22  **G2:** 19  Female:  **G1:** 15  **G2:** 15  DSM-based diagnostic approach reported:  No | **Leiter test, mean ± SD: G1:** 63.46 ± 21.33 **G2:** 61.44 ± 9.37  **Stress Survey Schedule, mean ± SD:**  **G1:** 114.03 ± 19.90  **G2:** 116.94 ± 18.61  **Quality of Life Questionnaire, mean ± SD:**  Total score:  **G1:** 50.59 ± 2.93  **G2:** 54.17 ± 2.90  Empower/ independence: **G1:** 12.13 ± 1.18 **G2:** 13.06 ± 1.81  Satisfaction: **G1:** 15.29 ± 2.32  **G2:** 16.23 ± 1.21  Competence/ productivity:  **G1:** 7.62 ± 1.08  **G2:** 7.64 ± .73  Social/integration:  **G1:** 15.54 ± 2.06  **G2:** 17.23 ± 2.04 | **Leiter test, mean ± SD: G1:** 62.16 ± 18.84 **G2:** 61.79 ± 14.87  **Stress Survey Schedule, mean ± SD:\* G1:** 103.19 ± 19.27  **G2:** 117.67 ± 16.25  **G1/G2:** *P* < 0.001  **Quality of Life Questionnaire, mean ± SD:\***  Total score:  **G1:** 63.62 ± 8.99  **G2:** 55.29 ± 3.45  **G1/G2:** *P* < 0.001  Empower/ independence: **G1:** 13.24± 1.88 **G2:** 14.26 ± 1.60 **G1/G2:** *P* = NS  Satisfaction: **G1:** 22.03 ± 2.92  **G2:** 15.03 ± 0.93  **G1/G2:** *P* < 0.001  Competence/ productivity:  **G1:** 11.35± 4.08  **G2:** 7.82 ± 7.33  **G1/G2:** *P* < 0.001  Social/integration:  **G1:** 17.00± 2.40  **G2:** 18.17 ± 2.11 **G1/G2:** *P* = NS  **Harms:**  NR |

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| **Interventions for adolescents and young adults with autism evidence table (continued)** | | | | |
| **Study**  **Description** | **Intervention** | **Inclusion/Exclusion**  **Criteria/Population** | **Baseline**  **Measures** | **Outcomes** |
| Author:  Gentry et al., 2010  Country:  US  Enrollment period:  NR  Funding:  Commonwealth Neurotrauma Initiative  Author industry relationship disclosures:  NR  Design:  Prospective case series | **Intervention:**  Four home-based training visits on the use of a personal digital assistant as a cognitive aid.  **Intervention target:**  Executive function- related tasks (memory, organization, planning, and goal-direction).  **Primary outcome:**  Occupational performance and satisfaction (COPM); satisfaction, usage, and retention (FATCAT).  **Groups:**  **G1:** PDA training  **Treatment duration:**  10-14 days  **Frequency of contact during study:**  As needed via phone or email (only initiated by participants)  **Last followup post-treatment:**  8 weeks  **Measure of treatment fidelity/adherence reported:**  Yes  **Co-interventions held stable during treatment:**  NR  **Concomitant therapies:**  NR  **N at enrollment:**  **G1:** 22  N at followup:  **G1:** 22 | Inclusion criteria:   * Autism diagnosis and current IEP * At least 14 years old * Attending public school in Virginia * Demonstrate sufficient dexterity * Functional vision and hearing * Caregiver willing to participate in assessment * Home personal computer   Exclusion criteria:   * See inclusion criteria   **Age, yrs, mean (range): G1:** 16.5 (14-18)  **Mental age:** NR  **Gender, n (%):**  Male:  **G1:** 18 (82)  Female:  **G1:** 4 (18)  DSM-based diagnostic approach reported:  No | **COPM score, mean:** Performance:  **G1:** 2.82  Satisfaction:  **G1:** 2.05 | **COPM score, mean:** Performance:  **G1:** 6.64  **G1/BL:** *P* < 0.001  Satisfaction:  **G1:** 6.32  **G1/BL:** *P* < 0.001  **FATCAT, n (%):**  Used PDA daily: **G1:** 22 (100)  Want to continue using:  **G1:** 22 (100)  Can program without help:  **G1:** 16 (73)  Device is a waste of time:  **G1:** 0 (0)  **Harms:**  NR |

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| **Interventions for adolescents and young adults with autism evidence table (continued)** | | | | |
| **Study**  **Description** | **Intervention** | **Inclusion/Exclusion**  **Criteria/Population** | **Baseline**  **Measures** | **Outcomes** |
| Author:  Greher et al., 2010  Country:  US  Enrollment period:  NR  Funding:  NR  Author industry relationship disclosures:  NR  Design:  Prospective case series | **Intervention:**  SoundScape music intervention, 90 minutes per week  **Intervention target:**  NR  **Primary outcome:**  NR  **Groups:**  **G1:** musicintervention  **G2:** parental evaluations  **Treatment duration:**  8 weeks  **Frequency of contact during study:**  Weekly  **Last followup post-treatment:**  Immediately post-treatment  **Measure of treatment fidelity/adherence reported:**  No  **Co-interventions held stable during treatment:**  NR  **Concomitant therapies:**  NR  **N at enrollment:**  **G1:** 22  N at followup:  **G1:** 22 | Inclusion criteria:   * Autism spectrum diagnosis * Aged between 13-30 * No severe behavioral challenges   Exclusion criteria:   * See inclusion criteria   **Age, yrs, mean (range): G1:** 18 (13-29)  **Mental age:** NR  **Gender:**  NR  DSM-based diagnostic approach reported:  No | NR | **Feedback questionnaire ratings (scale 1-10), mean:**  How enjoyable have you [your child] found the music program? **G1:** 7.86  **G2:** 7.91  How interesting have you [your child] found the music program? **G1:** 7.82  **G2:** 7.95  How much do you believe you [your child] have benefited socially from the music program?  **G1:** 6.95  **G2:** 6.86  **Feedback questionnaire, n:**  Have you [your child] made any friends in the music program?  Yes:  **G1:** 19  **G2:** 11  Kind of/not sure:  **G1:** 1  **G2:** 4  No:  **G1:** 2  **G2:** 6  **Harms:**  NR |

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| **Interventions for adolescents and young adults with autism evidence table (continued)** | | | | |
| **Study**  **Description** | **Intervention** | **Inclusion/Exclusion**  **Criteria/Population** | **Baseline**  **Measures** | **Outcomes** |
| Author:  Valenti et al., 2010  Country:  Italy  Enrollment period:  April 2007 to March 2009  Funding:  Italian National Health System  Author industry relationship disclosures:  None  Design:  Prospective case series | **Intervention:**  Intensive behavioral treatment at a semi-residential rehabilitation center for autism.  **Intervention target:**  Adaptive functioning  **Primary outcome:**  Adaptive functioning (VABS)  **Groups:**  **G1:** intensive behavioral treatment  **G1a:** female adolescents  **G1b:** male adolescents  **Treatment duration:**  2 years  **Frequency of contact during study:**  Yearly  **Last followup post-treatment:**  Immediately post-treatment  **Measure of treatment fidelity/adherence reported:**  Yes  **Co-interventions held stable during treatment:**  NR  **Concomitant therapies, n (%):**  Psychoactive drugs:  **G1:** 12 (35.3)  **N at enrollment:\***  **G1:** 34  N at followup:\*  **G1:** 34 | Inclusion criteria:   * Diagnosis of ASD * Regular public school attendance * Consent of parent or tutor   Exclusion criteria:   * See inclusion criteria   **Age, range: G1:** post-pubescent adolescents up to 18 yrs  **Mental age:** NR  **Gender, n (%):**  Male:  **G1:** 23 (68)  Female:  **G1:** 11 (32)  DSM-based diagnostic approach reported:  Yes | **VABS score, mean ± SD:**  Communication:  **G1a:** 72.59 ± 9.78  **G1b:** 84.18 ± 7.20  Daily living  **G1a:** 80.77 ± 8.64  **G1b:** 80.66 ± 8.66  Socialization:  **G1a:** 68.18 ± 8.82  **G1b:** 75.84 ± 6.53  Motor skills:  **G1a:** 74.88 ± 8.39  **G1b:** 94.93 ± 9.57 | **VABS score, year 1, mean ± SD:**  Communication:  **G1a:** 70.40 ± 7.97  **G1b:** 84.31 ± 7.75  Daily living:  **G1a:** 78.21 ± 9.27  **G1b:** 86.57 ± 8.26  Socialization:  **G1a:** 73.04 ± 8.99  **G1b:** 77.60 ± 8.20  Motor skills:  **G1a:** 84.07 ± 7.80  **G1b:** 99.41 ± 8.80  **VABS score, year 2, mean ± SD:**  Communication:  **G1a:** 73.23 ± 8.64  **G1b:** 87.93 ± 7.44  **G1a/BL:** *ES* = 0.02  **G1b/BL:** *ES* = 0.11  Daily Living:  **G1a:** 87.08 ± 8.38  **G1b:** 88.67 ± 8.87  **G1a/BL:** *ES* = 0.22  **G1b/BL:** *ES* = 0.19  Socialization:  **G1a:** 75.60 ± 8.02  **G1b:** 83.20 ± 8.92  **G1a/BL:** *ES* = 0.26  **G1b/BL:** *ES* = 0.23  Motor Skills:  **G1a:** 85.16 ± 6.37  **G1b:** 102.42 ± 8.39  **G1a/BL:** *ES* = 0.20  **G1b/BL:** *ES* = 0.16  **Harms:**  NR |

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| **Interventions for adolescents and young adults with autism evidence table (continued)** | | | | |
| **Study**  **Description** | **Intervention** | **Inclusion/Exclusion**  **Criteria/Population** | **Baseline**  **Measures** | **Outcomes** |

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| Author:  Laugeson et al.,  2009  Country:  US  Enrollment period:  NR  Funding:  NIH, NIMH  Author industry relationship disclosures:  NR  Design:  RCT | **Intervention:**  Program for the Education and Enrichment of Relational Skills (PEERS)  outpatient social skills program; weekly 90 minute sessions  **Groups:**  **G1:** PEERS  **G2:** delayed treatment control  **Intervention target:**  Improve friendship quality and social skills in teens  **Primary outcome:**  NR  **Treatment duration:**  12 weeks  **Frequency of contact during study:**  Weekly visits  **Last followup post-treatment:**  Immediately post-treatment  **Measure of treatment fidelity/adherence reported:**  Yes  **Co-interventions held stable during treatment:**  Yes  **Concomitant therapies, n:**  Lithium carbonate, quetiapine  **G1:** 1  **G2:** 0  Dexamethylphenidate, buproprion:  **G1:** 1  **G2:** 0  Methylphenidate:  **G1:** 1  **G2:** 0  Fluoxetine:  **G1:** 0  **G2:** 1  Atomoxetine, aripiprazole, oxycarbazepine:  **G1:** 0  **G2:** 1 | Inclusion criteria:   * Chronological age 13-17 years * Social problems as reported by the parent * Previous diagnosis of either high functioning * Autism, Asperger’s Disorder, or PDD-NOS * English fluency of the teen * Parent or family member who was a fluent English speaker and who was willing to participate in the study * Verbal IQ ≥ 70 on the K-BIT-2 * No history of major mental illness (e.g., bipolar disorder, schizophrenia, psychosis) * Absence of hearing, visual, or physical impairments which precluded teen from participating in outdoor sports activities * Teens who verbally expressed an interest in   participating in the intervention during the eligibility appointment  Exclusion criteria:   * See inclusion criteria   **Age, yrs, mean ± SD: G1:** 14.6 ± 1.3 **G2:** 14.6 ±1.6  **IQ, mean ± SD:**  **G1:** 96 ± 16.1  **G2:** 88.3 ± 21.1  **Gender, %:**  Male:  **G1:** 88.2  **G2:** 81.2  Female:  **G1:** 11.8  **G2:** 18.8 | **VABS score,** **mean ± SD:**  Communication:  **G1:** 72.2 ± 6.2  **G2:** 70.6 ± 6.6  Socialization:  **G1:** 65.8 ± 8.5  **G2:** 65.9 ± 7.0  Composite:  **G1:** 70.3 ± 8.5  **G2:** 68.6 ± 6.2  **TASSK score, teen report, mean ± SD:**  **G1:** 13.3 ± 2.4  **G2:** 12.6 ± 3.6  **QPQ score, teen report, mean ± SD:**  Host:  **G1:** 1.1 ± 1.4  **G2:** 0.6 ± 0.9  Guest:  **G1:** 0.9 ± 1.3  **G2:** 1.3 ± 2.3  Conflict:  **G1:** 4.1 ± 5.2  **G2:** 4.3 ± 4.5  **FQS score, teen report, mean ± SD:**  **G1:** 16.8 ± 3.4  **G2:** 18.1 ± 3.9  **QPQ score, parent report, mean ± SD:**  Host:  **G1:** 1.5 ± 2.7  **G2:** 0.6 ± 0.9  Guest:  **G1:** 0.9 ± 1.3  **G2:** 1.3 ± 2.5  Conflict:  **G1:** 6.5 ± 5.0  **G2:** 6.9 ± 5.6  **SSRS score, parent report, mean ± SD:**  Social skills:  **G1:** 80.2 ± 8.8 **G2:** 77.9 ± 12.1  Problem behaviors:  **G1:** 114.9 ± 14.2  **G2:** 120.7 ± 13.6 | **TASSK score, teen report, mean ± SD:**  **G1:** 19.6 ± 1.4 **G2:** 13.3 ± 3.8 **G1/G2:** *P* < 0.0001  **G1/BL:** *P* < 0.01 **G2/BL:** *P* = NS  **QPQ score, teen report, mean ± SD:**  Host:  **G1:** 3.2 ± 2.2 **G2:** 1.1 ± 1.3 **G1/G2:** *P* < 0.025 **G1/BL:** *P* < 0.01 **G2/BL:** *P* = NS  **FQS score, teen report, mean ± SD:**  **G1:** 17.2 ± 4.0 **G2:** 16.6 ± 4.6 **G1/G2:** *P* < 0.05 **G1/BL:** *P* = NS **G2/BL:** *P* < 0.05  **SSRS score, parent report, mean ± SD:**  Social skills:  **G1:** 89.7 ± 12.1 **G2:** 79.8 ± 11.7 **G1/G2:** *P* < 0.05 **G1/BL:** *P* < 0.01 **G2/BL:** *P* = NS  **Harms:**  NR |
| **Interventions for adolescents and young adults with autism evidence table (continued)** | | | | |
| **Study**  **Description** | **Intervention** | **Inclusion/Exclusion**  **Criteria/Population** | **Baseline**  **Measures** | **Outcomes** |
| Laugeson et al.,  2009 (continued) | Paroxetine:  **G1:** 0  **G2:** 1  **N at enrollment:**  **Total:** 35\*  N at followup:  **G1:** 17  **G2:** 16 | DSM-based diagnostic approach reported:  NR (diagnosis by community/university/ school psychologists) | **SSRS score, teacher report, mean ± SD:**  Social skills:  **G1:** 83.6 ± 7.3 (n=8) **G2:** 86.6 ± 14.8 (n=5)  Problem behavior:  **G1:** 96.5 ± 16.7 (n=8)  **G2:** 85.4 ± 21.3 (n=5) |  |

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| **Interventions for adolescents and young adults with autism evidence table (continued)** | | | | |
| **Study**  **Description** | **Intervention** | **Inclusion/Exclusion**  **Criteria/Population** | **Baseline**  **Measures** | **Outcomes** |
| Author:  Lawer et al., 2009  Country:  US  Enrollment period:  NR  Funding:  NR  Author industry relationship disclosures:  NR  Design:  Cross-sectional study | **Intervention:**  NA  **Intervention target:**  NR  **Primary outcome:**  NR  **Groups:**  **G1:** Individuals with ASD in US Vocational Rehabilitation System  **Treatment duration:**  NA  **Frequency of contact during study:**  NA  **Last followup post-treatment:**  NA  **Measure of treatment fidelity/adherence reported:**  No  **Co-interventions held stable during treatment:**  NR  **Concomitant therapies:**  NR  **N at enrollment:**  **G1:** 1,707  N at followup:  **G1:** 1,707 | Inclusion criteria:   * Age 18-65 * Individuals receiving vocational rehabilitation services from the US Rehabilitation Services Administration whose cases were closed in 2005 for reasons other than death or lack of need for services   Exclusion criteria:   * See inclusion criteria   **Age, yrs, n (%):** 18-25:  **G1:** 1,253 (73.4) 25-34:  **G1:** 265 (15.5) 35-44:  **G1:** 138 (8.1) 45-54:  **G1:** 43 (2.5) 55-65:  **G1:** 8 (0.5)  **Mental age:** NR  **Gender, n (%):**  Male:  **G1:** 1,434 (84)  DSM-based diagnostic approach reported:  No | NR | **Case deemed too severe to benefit from services, n (%):**  **G1:** 74 (4.3)  **Vocational outcomes at closure, n (%):**  Not employed: **G1:** 909 (55.7)  Employed in sheltered setting:  **G1:** 35 (2.1)  Competitive employment:  **G1:** 689(42.2)  **Received on-the-job supports at any time, by vocational outcome, n (%):**  Not employed:  **G1:** 115 (12.7) Employed in sheltered setting:  **G1:** 23 (65.7)  Competitive employment:  **G1:** 391 (56.8)  **Education at closure, n (%):**  < high school:  **G1:** 739 (43.7)  High school or GED:  **G1:** 642 (38.0)  > high school:  **G1:** 309 (18.3)  **Cost of services**  **among those with any expenditures, median:**  **G1:** $2,380(n=1,229)  **Average expenditure for purchased services, mean ± SD:**  **G1: $**3,324 ± $5,662  **Harms:**  NR |

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| **Interventions for adolescents and young adults with autism evidence table (continued)** | | | | |
| **Study**  **Description** | **Intervention** | **Inclusion/Exclusion**  **Criteria/Population** | **Baseline**  **Measures** | **Outcomes** |
| Author:  Jewell et al., 2007  Country:  US  Enrollment period:  NA  Funding:  NR  Author industry relationship disclosures:  NR  Design:  Retrospective case series | **Intervention:**  Rotating classroom schedule in a not-for-profit school for children with autism.  **Intervention target:**  NR  **Primary outcome:**  Number of crisis inter-ventions and the time spent in crisis intervention  **Groups:**  **G1:** Adolescent students with rotating classroom schedule  **Treatment duration:**  NR  **Frequency of contact during study:**  Daily  **Last followup post-treatment:**  NA  **Measure of treatment fidelity/adherence reported:**  No  **Co-interventions held stable during treatment:**  NR  **Concomitant therapies:**  NR  **N at enrollment:**  **G1:** 55  N at followup:  **G1:** 55 | Inclusion criteria:   * Enrolled at the study school * Primary diagnosis of autism * Diagnosed by a psychologist from the student’s home school   Exclusion criteria:   * Other primary diagnosis (e.g. behavior disorder or Rhett’s)   **Age, yrs, mean (range): G1:** 17.63 (14-22)  **Mental age:**  NR  **Gender, n (%):**  Male:  **G1:** 44 (80)  Female:  **G1:** 11 (20)  DSM-based diagnostic approach reported:  No | **Number of crisis events, mean ± SD:**  **G1:** 2.44 ± 6.39  **Time in crisis, min, mean ± SD:**  **G1:** 40.27 ± 102.08 | **Number of crisis events, mean ± SD:**  **G1:** 2.22 ± 5.88 **G1/BL:** *P* = 0.84  **Time in crisis, min, mean ± SD:**  **G1:** 28.96 ± 65.47  **G1/BL:** *P* = 0.83  **Harms:**  NR |

**Interventions for adolescents and young adults with autism evidence table (continued)**

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| **Study Description** | **Intervention** | **Inclusion/Exclusion Criteria/Population** | **Baseline Measures** | **Outcomes** |
| Author:  Tse et al., 2007  Country:  Canada  Enrollment period:  NR  Funding:  NR  Author industry relationship disclosures:  NR  Design:  Prospective case series | **Intervention:**  Social skills training for adolescents with Asperger’s syndrome and high-functioning autism in psychiatry clinic.  Psycho-educational and experiential methods of teaching social skills, with emphasis on learning through role play. Each group enrolled 7-8 adolescents.  **Intervention target:** Social competence and problem behaviors  **Primary outcome:**  NR  **Groups:**  **G1:** Social skills group  **Treatment duration:**  12 weeks  **Frequency of contact during study:**  Weekly  **Last followup post-treatment:**  Immediately post-treatment  **Measure of treatment fidelity/adherence reported:**  No  **Co-interventions held stable during treatment:**  NR  **Concomitant therapies, n (%):**  Psychotropic medication: 17 (37)  Atypical antipsychotics: 6 (NR)  Selective serotonin reuptake inhibitors: 5 (NR)  Methylphenidate: 5 (NR)  **N at enrollment:**  **G1:** 46  N at followup:  **G1:** 32 | Inclusion criteria:   * Diagnosis of an autism spectrum disorder by a child psychiatrist * Adequate language skills for participation in activities; being able to talk about their interests and to verbalize some goals for participation and willingness to attend   **Exclusion criteria:**   * See inclusion criteria   **Age, yrs, mean ± SD (range): G1:** 14.6 ±1.7 (13-18)  **Mental age:** NR  **Gender, %:**  Male:  **G1:** 61  Female:  **G1:** 39  DSM-based diagnostic approach reported:  NR | **SRS score, mean ± SD (n = 32):** Total:  **G1:** 95.9 ± 27.9  Social awareness: **G1:** 12.0 ± 4.0  Social cognition: **G1:** 16.9 ± 5.8  Social communication:  **G1:** 32.9 ± 9.8  Social motivation: **G1:** 15.8 ± 5.7  Autistic mannerisms:  **G1:** 18.2 ± 7.3  DSM social aspects:  **G1:** 69.1 ± 19.4  DSM language aspects:  **G1:** 8.5 ± 3.4  DSM preoccupations/ mannerisms:  **G1:** 18.2 ± 7.3  **N-CBRF Positive Social** **score, mean ± SD** **(n = 30):**  Total:  **G1:** 13.9 ± 4.4  Compliant/calm:  **G1:** 8.6 ± 3.1  Adaptive social:  **G1:** 5.3 ± 2.0  **ABC score, mean ± SD** **(n = 30):**  Total:  **G1:** 41.9 ± 22.1  Irritability:  **G1:** 8.9 ± 6.8  Lethargy/ withdrawal:  **G1:** 12.8 ± 7.5  Stereotypic behavior:  **G1:** 4.7 ± 3.8 | **SRS score, mean ± SD (n = 32):**  Total:  **G1:** 84.9 ± 28.3 **G1/BL:** *P* = 0.003, *ES* = 0.39  Social awareness:  **G1:** 11.5 ± 4.1  **G1/BL:** *P* = 0.321, *ES* = 0.12  Social cognition: **G1:** 15.0 ± 5.4 **G1/BL:** *P* = 0.009, *ES* = 0.34  Social communication: **G1:** 28.3 ± 10.1 **G1/BL:** *P* = 0.002, *ES* = 0.46  Social motivation:  **G1:** 13.6 ± 5.8 **G1/BL:** *P* = 0.013, *ES* = 0.38  Autistic mannerisms:  **G1:** 16.5 ± 6.8 **G1/BL:** *P* = 0.058, *ES* = 0.24  DSM social aspects:  **G1:** 60.7 ± 19.8 **G1/BL:** *P* = 0.001, *ES* = 0.43  DSM language aspects:  **G1:** 7.7 ± 3.5  **G1/BL:** *P* = 0.107, *ES* = 0.23  DSM preoccupations/ mannerisms:  **G1:** 16.5 ± 6.8 **G1/BL:** *P* = 0.058, *ES* = 0.24 |

**Interventions for Adolescents and Young Adults with Autism Evidence Table (continued)**

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| **Study Description** | **Intervention** | **Inclusion/Exclusion Criteria/Population** | **Baseline Measures** | **Outcomes** |
| Tse et al., 2007 (continued) |  |  | Hyperactivity:  **G1:** 12.1 ± 8.9  Inappropriate speech:  **G1:** 3.5 ± 2.6  **N-CBRF Problem Behavior score, mean ± SD** **(n = 30):**  Total:  **G1:** 51.3 ± 24.7  Conduct problems:  **G1:** 10.2 ± 7.8  Insecure/anxious: **G1:** 13.0 ± 6.2  Hyperactive:  **G1:** 8.3 ± 5.4  Self-injure/ stereotypic:  **G1:** 1.3 ± 1.8  Self-isolated/ ritualistic:  **G1:** 7.9 ± 5.2 | **N-CBRF Positive Social** **score, mean ± SD** **(n = 30):**  Total:  **G1:** 16.0 ± 5.5 **G1/BL:** *P* = 0.024, *ES* = 0.42  Compliant/calm:  **G1:** 10.0 ± 3.8 **G1/BL:** *P* = 0.052, *ES* = 0.40  Adaptive social: **G1:** 6.0 ± 2.3  **G1/BL:** *P* = 0.060, *ES* = 0.32  **ABC score, mean ± SD** **(n = 30):**  Total,  **G1:** 27.9 ± 16.5 **G1/BL:** *P* = 0.001, *ES* = 0.72  Irritability:  **G1:** 4.9 ± 4.0  **G1/BL:** *P* = 0.002, *ES* = 0.72  Lethargy/ withdrawal:  **G1:** 9.0 ± 7.5  **G1/BL:** *P* = 0.008, *ES* = 0.51  Stereotypic behavior:  **G1:** 2.8 ± 2.9  **G1/BL:** *P* = 0.005, *ES* = 0.56  Hyperactivity: **G1:** 9.0 ± 7.4  **G1/BL:** *P* = 0.029, *ES* = 0.38  Inappropriate speech:  **G1:** 2.2 ± 1.8  **G1/BL:** *P* = 0.003, *ES* = 0.58 |

**Interventions for Adolescents and Young Adults with Autism Evidence Table (continued)**

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| --- | --- | --- | --- | --- |
| **Study Description** | **Intervention** | **Inclusion/Exclusion Criteria/Population** | **Baseline Measures** | **Outcomes** |
| Tse et al., 2007 (continued) |  |  |  | **N-CBRF Problem Behavior score, mean ± SD** **(n = 30):**  Total:  **G1:** 38.6 ± 19.7 **G1/BL:** *P* = 0.005, *ES* = 0.57  Conduct problems:  **G1:** 7.7 ± 6.7 **G1/BL:** *P* = 0.046, *ES* = 0.34  Insecure/ anxious:  **G1:** 10.5 ± 5.6: **G1/BL:** *P* = 0.040, *ES* = 0.42  Hyperactive:  **G1:** 7.0 ± 4.9 **G1/BL:** *P* = 0.257, *ES* = 0.25  Self-injure/ stereotypic:  **G1:** 0.7 ± 1.1 **G1/BL:** *P* = 0.022, *ES* = 0.40  Self-isolated/ ritualistic:  **G1:** 5.5 ± 3.7 **G1/BL:** *P* = 0.003, *ES* = 0.53  **Feedback surveys, teen report, n:**  Liking the group: 10/13  Liked it a lot: 5/13  Disliking the group: 1/13  Improvement in ‘‘having a conversation”:  A lot: 7/13  Some: 5/13  Made friends in the group: 12/13 |

**Interventions for Adolescents and Young Adults with Autism Evidence Table (continued)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Study Description** | **Intervention** | **Inclusion/Exclusion Criteria/Population** | **Baseline Measures** | **Outcomes** |
| Tse et al., 2007 (continued) |  |  |  | **Feedback surveys, parent report, n:**  Child seemed happy to attend the group: 15/17  Overall improvement in their child’s social behavior:  A little: 10  The same: 3  Much better or very much better: 3  **Harms:** NR |

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| --- | --- | --- | --- | --- |
| **Interventions for Adolescents and Young Adults with Autism Evidence Table (continued)** | | | | |
| **Study**  **Description** | **Intervention** | **Inclusion/Exclusion**  **Criteria/Population** | **Baseline**  **Measures** | **Outcomes** |
| Author:  Garcia-Villamisar et al., 2006  Country:  Spain  Enrollment period:  NR  Funding:  Fondo Social Europeo, Cosejería de Asuntos Sociales de la Comunidad Autónoma de Madrid (Spain)  Author industry relationship disclosures:  NR  **Design:**  Prospective cohort | **Intervention:**  Sheltered and supported community-based work environments  **Intervention target:**  Cognitive performance  **Groups:**  **G1:** Supported employment  **G2:** Unemployed  **Primary outcome:**  NR  **Treatment duration:** Average length of community employment: 30 months for an average of 20 hours/week  **Frequency of contact during study:**  Beginning and end of program  **Last followup post-treatment:**  Immediately post-treatment  **Measure of treatment fidelity/adherence reported:**  Yes  **Co-interventions held stable during treatment:**  NR with exception of medication free at testing  **Concomitant therapies:** NR  **N at enrollment:**  **G1+G2:** 44  N at followup:  **G1+G2:** 44 | Inclusion criteria:   * Diagnosis of autism * For G2, sheltered   workshops enrollment prior to participation in supported work program   * No severe behavior problems * Acceptable professional and vocational abilities * Medication free at the time of testing * Score above 35th percentile point on the Standard Progressive Matrices (SPM)   Exclusion criteria:   * History of psychiatric disorder, neurological disorder or head injury   **Age, yrs, mean ± SD:**  **G1:** 25.52 ± 3.35 **G2:** 24.32 ± 4.34  **IQ, Leiter (total score), mean ± SD:** NR  **Gender, n:**  Male:  **G1+G2:** 32  Female:  **G1+G2:** 12  DSM-based diagnostic approach reported:  Yes (DSM-IV & CARS) | **Big Circle/Little Circle score, mean ± SD:**  **G1:** 39.38 ± 0.97 **G2:** 39.52 ± 0.73 **G1/G2:** *P* = NS  **Spatial Span Task** **score, mean ± SD:**  **G1:** 3.90 ± 0.14  **G2:** 3.78 ± 1.17  **G3:** *P* = NS  **Spatial Working Memory Task** **score, mean ± SD:**  Between errors:  **G1:** 68.14 ± 14.55 **G2:** 67.91 ± 13.2 **G1/G2:** *P* = NS  Strategy:  **G1:** 38.19 ± 2.11  **G2:** 39.26 ± 2.84 **G1/G2:** *P* = NS  **Intradimensional/ Extradimensional score, mean ± SD:**  Stages completed:  **G1:** 7.48 ± 5.11 **G2:** 7.39 ± 0.94 **G1/G2:** *P* = NS  Errors:  **G1:** 16.90 ± 10.94 **G2:** 19.69 ± 10.75 **G1/G2:** *P* = NS  **Planning task ‘Stockings of Cambridge’ score, mean ± SD:**  Problems solved in minimum moves:  **G1:** 5.10 ± 2.47  **G2:** 5.91 ± 2.45 **G1/G2:** *P* = NS  Average planning time:  **G1:** 6.71 ± 3.02  **G2:** 6.91 ± 3.38 **G1/G2:** *P* = NS | **Big Circle/Little Circle score, mean ± SD:**  **G1:** 39.48 ± 0.87 **G2:** 39.25 ± 0.96  **G1/G2:** *P* = NS  **Spatial Span Task** **score, mean ± SD:**  **G1:** 4.85 ± 0.79 **G2:** 3.96 ± 0.93 **G1/G2:** *P* < 0.05  **Spatial Working Memory Task** **score, mean ± SD:**  Between errors:  **G1:** 61.91 ± 12.38  **G2:** 66.13 ± 13.19  **G1/G2:** *P* < 0.001  Strategy:  **G1:** 34.00 ± 2.19 **G2:** 37.43 ± 2.92 **G1/G2:** *P* < 0.001  **Intradimen-sional/ Extra-dimensional score, mean ± SD:**  Stages completed:  **G1:** 7.43 ± 0.51 **G2:** 7.30 ± 0.47 **G1/G2:** *P* = 0.02  Errors:  **G1:** 12.71 ± 6.71 **G2:** 17.13 ± 9.15 **G1/G2:** *P* = NS  **Planning task ‘Stockings of Cambridge’ score, mean ± SD:**  Problems solved in minimum moves:  **G1:** 7.38 ± 1.80 **G2:** 5.57 ± 1.88 **G1/G2:** *P* < 0.01 |

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| **Interventions for Adolescents and Young Adults with Autism Evidence Table (continued)** | | | | |
| **Study**  **Description** | **Intervention** | **Inclusion/Exclusion**  **Criteria/Population** | **Baseline**  **Measures** | **Outcomes** |
| Garcia-Villamisar et al., 2006 (continued) |  |  | **Trail Making Test – part B score, mean ± SD:**  **G1:** 55.48 ± 18.27 **G2:** 66.22 ± 23.75 **G1/G2:** *P* = NS  **Matching Familiar Figures Test score, mean ± SD:**  Time of 1st answer:  **G1:** 16.33 ± 4.86 **G2:** 17.43 ± 3.91 **G1/G2:** *P* = NS  Errors:  **G1:** 7.76 ± 2.84  **G2:** 7.96 ± 3.62 **G1/G2:** *P* = NS  **Word fluency test score, mean ± SD:**  **G1:** 39.38 ± 0.97 **G2:** 39.52 ± 0.73 **G1/G2:** *P* = NS  **CARS score, mean ± SD:**†  **G1:** 34.81 ± 5.19 **G2:** 33.19 ± 6.65 | Average planning time:  **G1:** 4.86 ± 2.54 **G2:** 7.61 ± 3.04 **G1/G2:** *P* < 0.001  **Trail Making Test – part B score, mean ± SD:**  **G1:** 51.14 ± 15.19  **G2:** 66.43 ± 23.03  **G1/G2:** *P* < 0.001  **Matching Familiar Figures Test score, mean ± SD:**  Time of 1st answer:  **G1:** 10.76 ± 4.30 **G2:** 15.96 ± 4.14 **G1/G2:** *P* < 0.001  Errors: **G1:** 5.05 ± 1.47 **G2:** 8.04 ± 2.88 **G1/G2:** *P* < 0.001  **Word fluency test score, mean ± SD:**  **G1:** 39.48 ± 0.87  **G2:** 39.26 ± 0.96 **G1/G2:** *P* = NS  **Harms:**  NR |

**Interventions for Adolescents and Young Adults with Autism Evidence Table (continued)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Study**  **Description** | **Intervention** | **Inclusion/Exclusion**  **Criteria/Population** | **Baseline**  **Measures** | **Outcomes** |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Author:**  Golan et al., 2006  Study 1  **Country:**  UK  **Enrollment period:**  NR  **Funding:**  National Alliance for Autism Research, Corob Charitable Trust, Cambridge Overseas Trust, B’nai B’rith Leo Baeck, Shirley Foundation, Medical Research Council, Three Guineas Trust  **Author industry relationship disclosures:**  NR  **Design:**  Controlled study | **Intervention:**  Mind Reading computer program used at home for 2 hr/wk over 10 weeks  **Intervention target:**  Emotion recognition skills  **Primary outcome:**  Emotion recognition  **Groups:**  **G1:** computer program  **G2:** no computer program  **Treatment duration:**  10-15 weeks  **Frequency of contact during study:**  Beginning and end of study, with 1 followup phone call during the study  **Last followup post-treatment:**  Immediately post-treatment  **Measure of treatment fidelity/adherence reported:**  Yes  **Co-interventions held stable during treatment:**  Yes  **Concomitant therapies:**  NR  **N at enrollment:**  **G1:** 24  **G2:** 22  **N at followup:**  **G1:** 19  **G2:** 22 | **Inclusion criteria:**  Diagnosed with AS/HFA in specialist centers using established criteria  No participation in any related intervention during the last 3 months  No plans for engaging in another intervention while the study was ongoing  **Exclusion criteria:**  See inclusion criteria  **Age, yrs, mean ± SD: G1:** 30.5 ± 10.3  **G2:** 30.9 ± 11.2  **Mental age:** NR  **Verbal IQ, mean ± SD:**  **G1:** 108.3 ± 13.3  **G2:** 109.7 ± 10.0  **Performance IQ, mean ± SD:**  **G1:** 112.0 ± 12.6  **G2:** 115.3 ± 12.3  **Gender, n (%):**  Male:  **G1:** 14 (74)  **G2:** 17 (73)  Female:  **G1:** 5 (26)  **G2:** 5 (23)  **DSM-based diagnostic approach reported:**  No  **AQ, mean ± SD**  **G1:** 37.2 ± 8.4  **G2:** 38.2 ± 7.5 | **CAM score, mean ± SD:**  Face mask:  **G1:** 31.3 ± 8.8  **G2:** 32.5 ± 8.4  Voice task:  **G1:** 33.8 ± 6.6  **G2:**35.2 ± 7.4  Number of concepts recognized:  **G1:** 9.8 ± 5.2  **G2:** 10.5 ± 5.2  **Reading the Mind in the Eyes, mean ± SD:**  **G1:** 23.1 ± 6.7  **G2:** 23.9 ± 6.7  **Reading the Mind in the Voice, mean ± SD:**  **G1:** 16.1 ± 2.9  **G2:** 16.1 ± 3.9  **Reading the Mind in Films:**  NR | **CAM score, mean ± SD:\***  Face mask:  **G1:** 37.5 ± 7.8  **G2:** 36.6 ± 7.9  **G1/G2:** *P* < 0.002  Voice task:  **G1:** 38.9 ± 6.2  **G2:** 36.6 ± 7.9  **G1/G2:** *P* < 0.01  Number of concepts recognized:\*\*  **G1:** 13.6 ± 4.8  **G2:** 11.3 ± 5.4  **G1/G2:** *P* < 0.01  **Reading the Mind in the Eyes, mean ± SD:\***  **G1:** 23.8 ± 4.7  **G2:** 23.0 ± 7.3  **G1/G2:** *P* = NS  **Reading the Mind** **in the Voice, mean ± SD:\***  **G1:** 16.7 ± 3.9  **G2:** 17.4 ± 3.5  **G1/G2:** *P* = NS  **Reading the Mind in Films, mean ± SD:\***  **G1:** 11.8 ± 3.8  **G2:** 12.8 ± 3.4  **G1/G2:** *P* = NS  **Harms:**  NR |

**Comments:**

Typical controls included in study as well but data not extracted.

\* Significance is time X group interaction from a MANCOVA with covariates age, verbal, and performance IQ.

\*\* ANOVA for CAM concepts showed significant individual between group effects for the following concepts: grave (*P* < 0.05), lured (*P* < 0.05), uneasy (*P* < 0.05), intimate (*P* < 0.05), and nostalgic (*P* < 0.001) (data NR).**Interventions for Adolescents and Young Adults with Autism Evidence Table (continued)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Study**  **Description** | **Intervention** | **Inclusion/Exclusion**  **Criteria/Population** | **Baseline**  **Measures** | **Outcomes** |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Author:**  Golan et al., 2006  Study 2  **Country:**  UK  **Enrollment period:**  NR  **Funding:**  National Alliance for Autism Research, Corob Charitable Trust, Cambridge Overseas Trust, B’nai B’rith Leo Baeck, Shirley Foundation, Medical Research Council, Three Guineas Trust  **Author industry relationship disclosures:**  NR  **Design:**  Prospective cohort study | **Intervention:**  Computer program group: Mind Reading computer program 2 hr/wk for 10 weeks and 10 weekly small group sessions with a tutor  Social skills training: 10 weekly sessions of small group social skills training facilitated by a clinical psychologist  **Intervention target:**  Emotion recognition skills  **Primary outcome:**  Emotion recognition  **Groups:**  **G1:** computer program and tutor  **G2:** social skills training  **Treatment duration:**  10 weeks  **Frequency of contact during study:**  Weekly  **Last followup post-treatment:**  Immediately post-treatment  **Measure of treatment fidelity/adherence reported:**  No  **Co-interventions held stable during treatment:**  Yes  **Concomitant therapies:**  NR  **N at enrollment:**  **G1:** 18  **G2:** 18  **N at followup:**  **G1:** 13  **G2:** 13 | **Inclusion criteria:**  Diagnosed with AS/HFA in specialist centers using established criteria  No participation in any related intervention during the last 3 months  Had no plans for engaging in another intervention while the study was ongoing  **Exclusion criteria:**  See inclusion criteria  **Age, yrs, mean ± SD: G1:** 25.5 ± 9.3  **G2:** 24.4 ± 6.4  **Mental age:** NR  **Verbal IQ, mean ± SD:**  **G1:** 105.7 ± 16.1  **G2:** 96.5 ± 15.5  **Performance IQ, mean ± SD:**  **G1:** 103.9± 19.8  **G2:** 95.5 ± 6.0  **Gender, n (%):**  Male:  **G1:** 12 (92)  **G2:** 10 (77)  Female:  **G1:** 1 (8)  **G2:** 3 (23)  **DSM-based diagnostic approach reported:**  No | **CAM scores, mean ± SD:**  Face mask:  **G1:** 32.3 ± 8.1  **G2:** 26.8± 9.7  Voice task:  **G1:** 33.2± 9.1  **G2:** 31.1± 9.1  Number of concepts recognized:  **G1:** 10.2± 4.9  **G2:** 7.7± 5.8  **Reading the Mind in the Eyes, mean ± SD:**  **G1:** 21.6± 6.3  **G2:** 21.5± 5.6  **Reading the Mind in the Voice, mean ± SD:**  **G1:** 15.1± 2.8  **G2:** 13.9± 4.5  **Reading the Mind in Films:**  NR | **CAM scores, mean ± SD:\***  Face mask:  **G1:** 36.2± 8.9  **G2:** 29.3±9.5  **G1/G2:** *P* = NS  Voice task:  **G1:** 38.9± 7.6  **G2:** 31.8± 10.9  **G1/G2:** *P* < 0.012  Number of concepts recognized:\*\*  **G1:** 13.5± 5.2  **G2:** 8.5± 6.3  **G1/G2:** *P* < 0.016  **Reading the Mind in the Eyes, mean ± SD:\***  **G1:** 23.8± 4.2  **G2:** 19.2± 6.8  **G1/G2:** *P* < 0.01  **Reading the Mind** **in the Voice, mean ± SD:\***  **G1:** 16.2± 3.5  **G2:** 14.7± 4.6  **G1/G2:** *P* = NS  **Reading the Mind in Films, mean ± SD:**  **G1:** 11.9± 3.7  **G2:** 10.5± 3.2  **Harms:**  NR |

**Comments:**

\* Significance is time X group interaction from a MANCOVA with covariate verbal IQ.

\*\* ANOVA for CAM concepts showed significant individual between group effects for the following concepts: vibrant (*P* < 0.05) and mortified (*P* < 0.01) (data NR).

**Interventions for Adolescents and Young Adults with Autism Evidence Table (continued)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Study**  **Description** | **Intervention** | **Inclusion/Exclusion**  **Criteria/Population** | **Baseline**  **Measures** | **Outcomes** |
| **Author:**  Hellings et al., 2006  **Country:**  US  **Enrollment period:**  NR  **Funding:**  NIH  **Author industry relationship disclosures:**  NR  **Design:**  Randomized crossover study | **Intervention:**  Blinded phase: Randomized subjects to 3, 4 or 5 weeks placebo; then randomized to low or high dose risperidone phase; risperidone gradually increased to target dose over 2 weeks then maintained for 4 weeks, then crossover to other study arm; dose then gradually tapered down for 2 weeks, followed by 3, 4 or 5 week phase of placebo, then open label phase for 24 weeks.  Low dose risperidone: children and adolescents 1 mg/day; adults 2 mg/day  High dose risperidone:  children and adolescents 2.0 mg/day (range 1.2-2.9 mg/day); adults 3.6 mg/day (range 2.4-5.2 mg/day)  Open label phase: optimal dose of risperidone, adjusted monthly as needed  **Intervention target:**  Persistent aggression, property destruction and self-injury  **Primary outcome:**  ABC-C Irritability subscale score  **Groups:**  **G1:** all participants  **Treatment duration:**  46 weeks  **Frequency of contact during study:**  Every second week and at the end of each sub-phase during the acute phase; monthly during the maintenance phase | **Inclusion criteria:**  Age 6-65 years  Mental retardation  (IQ < 70)  History of aggression, property destruction or self-injury ≥ 6 months by caregiver report  Baseline Irritability subscale scores above norms for age, gender and setting as rated by the primary caregiver  Drug-free period lasting ≥ 2 weeks  **Exclusion criteria:**  Previous risperidone hypersensitivity  History of neuroleptic malignant syndrome  Seizures in past year  Degenerative brain disease as assessed by history  Problematic living situation such as lack of reliable caregiving  **Age, yrs, mean ± SD: G1:** 22 ± 13.1  **Age, years, n:**  8-12 (children):  **G1:** 13  13-18 (adolescents):  **G1:** 8  22-56 (adults):  **G1:** 19  **Mental age:**  NR  **Gender, n (%):**  Male:  **G1:** 23 (58)  Female:  **G1:** 17 (42)  **DSM-based diagnostic approach reported:**  Yes | **ABC-C subscale scores, 1st placebo period, mean ± SD:**  Irritability:  **G1:** 19.16 ± 9.96  Lethargy:  **G1:** 7.61 ± 6.85  Stereotypy:  **G1:** 5.72 ± 5.63  Hyperactivity:  **G1:** 19.51 ± 11.10  Excessive speech: **G1:** 4.42 ± 3.25  **ABC-C subscale scores, 2nd placebo period, mean ± SD:**  Irritability:  **G1:** 18.22 ± 12.35  Lethargy:  **G1:** 7.04 ± 7.62  Stereotypy:  **G1:** 6.47 ± 6.84  Hyperactivity:  **G1:** 19.95 ± 15.05  Excessive speech:  **G1:** 3.97 ± 15.05 | **ABC-C Subscale scores, low dose phase, mean ± SD:**  Irritability:\*  **G1:** 11.15 ± 9.28  Lethargy:  **G1:** 5.06 ± 5.96  Stereotypy:  **G1:** 4.07 ± 4.86  Hyperactivity:  **G1:** 12.79 ± 11.38  Excessive speech:  **G1:** 3.11 ± 3.15  **ABC-C Subscale scores, high dose phase, mean ± SD:**  Irritability:\*  **G1:** 13.31 ± 8.91  Lethargy:  **G1:** 6.98 ± 6.36  Stereotypy:  **G1:** 5.14 ± 5.51  Hyperactivity:  **G1:** 14.59 ± 12.44  Excessive speech:  **G1:** 3.35 ± 3.50  **Harms, n:**  Weight gain > 3.0 kg:  **G1:** 28/40  Sedation and gastrointestinal side effects:\*\*  **G1:** 13/40  Seizure (maintenance phase):  **G1:** 1 |

**Interventions for Adolescents and Young Adults with Autism Evidence Table (continued)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Study**  **Description** | **Intervention** | **Inclusion/Exclusion**  **Criteria/Population** | **Baseline**  **Measures** | **Outcomes** |
| Hellings et al., 2006 (continued) | **Last followup post-treatment:**  Immediately post-treatment  **Measure of treatment fidelity/adherence reported:**  No  **Co-interventions held stable during treatment:**  NR  **Concomitant therapies:**  NR  **N at enrollment:**  **All:** 40  **N at followup:**  **All:** 33 |  |  |  |

**Comments:**

\* ABC-C irritability scores across both acute drug phases were significantly different than placebo (*P* = 0.0002). The pattern of results for the children and adolescents was similar (data only available in figures).

The linear decreasing trend in irritability scores across the maintenance phase approached significance (*P* = 0.09).

Age group was a significant predictor of mean irritability scores across the maintenance phase (P < 0.0001).

DISCUS scores in the acute drug phase was more significant versus the 1st placebo period (P = 0.052) than versus the 2nd placebo period (*P* = 0.482).

NSEC side effects significant at the 0.05 level were: drowsiness, increased weight gain, appetite, too quiet, not themselves, tremor, lack of spontaneity and nasal congestion.

**\*\*** These side effects lead to study withdrawal for 6/13 subjects.

**Interventions for Adolescents and Young Adults with Autism Evidence Table (continued)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Study**  **Description** | **Intervention** | **Inclusion/Exclusion**  **Criteria/Population** | **Baseline**  **Measures** | **Outcomes** |
| **Author:**  Howlin et al., 2005  **Country:**  UK  **Enrollment period:**  NA  **Funding:**  The National Autistic Society, UK Department for Work and Pensions, New Deal for Disabled People, Student Support Service, British Telecom  **Author industry relationship disclosures:**  NR  **Design:**  Retrospective case series  See related study Mawhood et al., 1999 | **Intervention:**  Supported employment program  **Intervention target:**  Preparation for work and obtaining employment  **Primary outcome:**  NR  **Groups:**  **G1:** Supported employ-ment program participants  **Ga:** 1995-1996 (pilot)  **Gb:** 2003-2005  **Treatment duration:**  NR  **Frequency of contact during study:**  NR  **Last followup post-treatment:**  NR  **Measure of treatment fidelity/adherence reported:**  No  **Co-interventions held stable during treatment:**  NR  **Concomitant therapies:** NR  **N at enrollment:**  **G1a:** 30 **G1b:** 117  **N at followup:**  **G1a:** 30  **G1b:** 89 | **Inclusion criteria:**  Participation in supported employment program from 1995-2003  **Exclusion criteria:**  See inclusion criteria  **Age, yrs, mean ± SD: G1a:** 31.1 ± 9.1  **G1b:** 31.4 ± 9.3  **Mental age,** **Raven nonverbal IQ, mean ± SD (range): G1a:** 110.2 ± 17.6 (70-135)  **G1b:** 110.7 ± 19.5 (60-139)  **Gender, male:female ratio:**  **G1a:** 9.0:1  **G1b:** 4.2:1  **DSM-based diagnostic approach reported:**  Yes (20% of client diagnoses confirmed with ADI or ADI-R) | **BPVS score,** **mean ± SD (range):**  **G1a:** 94.7 ± 21.2 (41-127)  **G1b:** 121.6 ± 32.3 (48-160)  **EOWPVT score, mean ± SD (range):**  **G1a:** 99.3 ± 19.1 (59-132)  **G1b:** 91.2 ± 16.1 (50-122)  **Benefits received, n:**  Severe disability allowance:  **G1:** 6  Income support:  **G1:** 26  Housing benefit: **G1:** 37  Job seekers allowance:  **G1:** 36  Incapacity benefit:  **G1:** 16  Council tax:  **G1:** 19  Tax credit:  **G1:** 1  Other:  **G1:** 6  Disability allowance: **G1:** 37  **Employed, n (%):**  **G1b:** 31/89(39)  **Living independently, n:**  **G1b:** 25 | **Benefits received, n:**  Severe disability allowance:  **G1:** 1  Income support: **G1:** 7  Housing benefit: **G1:** 11  Job seekers allowance:  **G1:** 0  Incapacity benefit: **G1:** 5  Council tax:  **G1:** 8  Tax credit:  **G1:** 9  Other:  **G1:** 2  Disability allowance:  **G1:** 44  **Employed, n (%):**  **G1b:** 59/89(66)  **G1b/BL:** *P* < 0.001  **Living independently, n:**  **G1b:** 34  **Job satisfaction and social outcomes among those employed, n:**  Generally satisfied with job: **G1b:** 50/59  Job lives up to expectations: **G1b:** 45/59  Satisfied with work hours:  **G1b:** 47/59  Satisfied with pay: **G1b:** 38/59  Liked boss:  **G1b:** 49/59 |

**Interventions for Adolescents and Young Adults with Autism Evidence Table (continued)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Study**  **Description** | **Intervention** | **Inclusion/Exclusion**  **Criteria/Population** | **Baseline**  **Measures** | **Outcomes** |
| Howlin et al., 2005  (continued) |  |  |  | Considered supported employment program helpful: **G1b:** 58/59  Could not have managed without supported employment program help: **G1b:** 44/59  Get along with colleagues:  **G1b:** 52/59  Made friendships as a result of jobs: **G1b:** 32/59  Meet with colleagues outside of work: **G1b:** 7/59  **Jobs found meeting criteria of 16+ hrs/week for ≥ 13 weeks, n (%):**  **G1:** 134/192 (70)  **Classisfication of jobs found, n (%):\***  Permanent contracts:  **G1:** 107/185 (58)  Short-term contracts:  **G1:** 12/185 (6)  Temporary:  **G1:** 66/185 (36)  **Line managers satisfaction with supported employment program, n:**  Satisfied with service offered: **G1b:** 50/63  No problems with participants’ work performance:  **G1b:** 26/63 |

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| --- | --- | --- | --- | --- |
| **Interventions for Adolescents and Young Adults with Autism Evidence Table (continued)** | | | | |
| **Study**  **Description** | **Intervention** | **Inclusion/Exclusion**  **Criteria/Population** | **Baseline**  **Measures** | **Outcomes** |
| Howlin et al., 2005  (continued) |  |  |  | Experienced some difficulties with participants’ work performance:  **G1b:** 37/63  Program helped to address performance difficulties:  **G1b:** 61/63  Personally gained from working with supported employment program:  **G1b:** 51/63  **Senior manager or employers’ satisfaction with supported employment program:**  Very satisfied: **G1b:** 47/61  Satisfied:  **G1b:** 13/61  **Harms:**  NR |

**Comments:**

Data were collected on clients enrolled from April 1995 to March 2003; new data were collected for clients registered between 2002 and 2003 and for area 3 were available for the years 2000-2003.

\* Data missing for 7 of the 192 jobs found.

Among 19/30 participants in 1995-1996 who found jobs, 13 remained in permanent jobs in 2002-2003, and 2 had re-enrolled with the supported employment program. Of the 11/30 not finding jobs in 1995-1996, 2 located employment by 2002-2003, 1 acted as a volunteer, and 1 had re-enrolled with the supported employment program.

**Interventions for Adolescents and Young Adults with Autism Evidence Table (continued)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Study**  **Description** | **Intervention** | **Inclusion/Exclusion**  **Criteria/Population** | **Baseline**  **Measures** | **Outcomes** |
| **Author:**  Kaplan et al.,  2005  **Country:**  US  **Enrollment period:**  2002 to 2003  **Funding:**  NR  **Author industry relationship disclosures:**  NA  **Design:**  Retrospective case series | **Intervention:**  Music therapy in varying group sizes; sessions occurred in community music school, suburban satellite, group home settings  **Intervention target:**  Behavioral/psychosocial skills; language/ communication skills; perceptual/motor skills; cognitive skills; musical skills; modifying physiological responses  **Primary outcome:**  Specific to client  **Groups:**  **G1:** Music therapy  **Treatment duration:**  2 program years  **Frequency of contact during study:**  NR  **Last followup post-treatment:**  NR  **Measure of treatment fidelity/adherence reported:**  No  **Co-interventions held stable during treatment:**  NR  **Concomitant therapies:**  NR  **N at enrollment:**  **G1:** 40\*  **N at followup:**  **G1:** 40 | **Inclusion criteria:**  Children and adults with ASD diagnosis receiving music therapy  **Exclusion criteria:**  See inclusion criteria  **Age, yrs, mean (range): G1:** 13.9 (2-49)  **Mental age:** NR  **Gender, n (%):**  Male:  **G1:** 28 (70)  Female:  **G1:** 12 (30)  **DSM-based diagnostic approach reported:**  No | NR | **Met initial objectives, %:**  **G1:** 100  **Met intermediate objectives, %:**  **G1:** 77  **Met Intermediate objectives, by category, %:**  Behavioral/psy-chosocial skills:  **G1:** 74  Language/com-munication skills:  **G1:** 74  Perceptual/motor skills:  **G1:** 80  Cognitive skills:  **G1:** 100  Musical skills:  **G1:** 100  **Generalization of skills learned in primary goal areas to nonmusic therapy settings, by category, %:**  Behavioral/psychosocial:  **G1:** 14/16 (88)  Language/ communication:  **G1:** 9/9 (100)  Perceptual/motor:  **G1:** 1/2 (50)  Cognitive:  **G1:** 2/2 (100)  Musical:  **G1:** 1/1 (100)  **Harms:**  NR |

**Comments:**

\* If a client was served both years, each year with that client was treated separately in the data.

**Interventions for Adolescents and Young Adults with Autism Evidence Table (continued)**

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| **Study**  **Description** | **Intervention** | **Inclusion/Exclusion**  **Criteria/Population** | **Baseline**  **Measures** | **Outcomes** |
| **Author:**  O’Connor et al.,  2004  **Country:**  Canada  **Enrollment period:**  NR  **Funding:**  NR  **Author industry relationship disclosures:**  NR  **Design:**  Randomized trial with crossover design | **Intervention:**  In one session, students read 5 passages written in 3 different procedural facilitation styles (pre-reading questions, anaphoric cuing, and cloze task) and one control style.  Order and style randomly varied (approximately 10 min/passage, including 1 passage in each facili-tation style and 2 control passages); experiments took place at home (n=14) or school (n=6).  **Intervention target:**  Comprehension of text  **Primary outcome:**  Comprehension of text  **Groups:**  **G1:** all participants  **Treatment duration:**  Single session  **Frequency of contact during study:**  NA  **Last followup post-treatment:**  Immediately post treatment  **Measure of treatment fidelity/adherence reported:**  No  **Co-interventions held stable during treatment:**  NR  **Concomitant therapies:**  NR  **N at enrollment:**  **G1:** 20  **N at followup:**  **G1:** 20 | **Inclusion criteria:**  Moderate to high levels of decoding  Lower levels of reading comprehension  **Exclusion criteria:**  See inclusion criteria  **Age, yrs, mean ± SD: G1:** 15.11 ± 0.99  **Mental age, Stanford-Binet Intelligence, mean ± SD: G1:** 88.15 ±16.06  **Gender, n (%):**  Male:  **G1:** 19 (95)  Female:  **G1:** 1 (5)  **DSM-based diagnostic approach reported:**  Yes | **Total Reading Comprehension score, mean ± SD;**  Control passage 1: **G1:** 12.79 ± 6.33  Control passage 2: **G1:** 12.86 ± 6.27 | **Total Reading Comprehension score, mean ± SD;**  Anaphoric cuing passage:  **G1:** 15.41 ± 6.28  **G1/BL:** *P* = 0.03  Prereading ques-tions passage:  **G1:** 13.88 ± 5.47  **G1/BL:** *P* = 0.29  Cloze passage:  **G1:** 13.83 ± 5.14  **G1/BL:** *P* = 0.32  **Improvement of ≥ 0.50 SD, score vs. control, n:**  Anaphoric cuing passage:  **G1:**11  Prereading ques-tions passage:  **G1:** 7  Cloze passage:  **G1:** 7  **Harms:**  NR |

**Comments:**

Repeated measures ANOVA showed a significant effect of procedural facilitation (combined) vs. control (*P* = 0.05).

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| **Interventions for Adolescents and Young Adults with Autism Evidence Table (continued)** | | | | |
| **Study**  **Description** | **Intervention** | **Inclusion/Exclusion**  **Criteria/Population** | **Baseline**  **Measures** | **Outcomes** |
| Author:  Van Bourgondien et al., 2003  **Country:**  US  Enrollment period:  NR  Funding:  NIMH  Author industry relationship disclosures:  NR  Design:  Prospective Cohort | **Intervention:** Experimental treatment program (combined residential & vocational training program) using TEACCH psychoeduca-tional model  Part-random, part-clinical/ administrative assignment of subjects to the treat-ment group; the remaining participants were living in one of three control conditions: group homes institutions or family home  **Intervention target:** Family satisfaction, measures of participant skills & behaviors  **Primary outcome:**  NR  **Groups:**  **G1:** TEACCH-based program  **G2:** Family home  **G3:** Group homes  **G4:** Institutions  **Treatment duration:**  24 hour programs assessed 6 and 12 months after participants’ entry into TEACCH program  **Frequency of contact during study:**  4 time periods of 6 month intervals  **Last followup post-treatment:**  12 months after moving into G1  **Measure of treatment fidelity/adherence reported:**  No  **Co-interventions held stable during treatment:**  No | Inclusion criteria:   * Adolescents and adults with autism selected from applicants to the TEACCH-based program\*   Exclusion criteria:   * See inclusion criteria   **Age, yrs, mean ± SD: G1:** 23.7 ± 4.4 **G2:** 26.6 ± 5.1 **G3:** 27.8 ± 8.5 **G4:** 21.5 ± 5.0  **Mental age, functioning in the moderate to severe/ profound ranges of mental retardation, %:**  **Total:** 85  **Gender, n:**  Male:  **G1:** 6  **G2:** 8  **G3:** 8  **G4:** 4  Female:  **G1:** 0  **G2:** 2  **G3:** 2  **G4:** 2  DSM-based diagnostic approach reported:  Yes (CARS) | CARS score, mean ± SD: G1: 37.3 ± 5.3 G2: 35.6 ± 6.9 G3: 34.7 ± 3.9 G4: 37.2 ± 2.9  **ERS score, mean ± SD:**  Communication: **G1:** 3.0 ± 0.65  Structure: **G1:** 2.58 ± 0.62  Socialization: **G1:** 2.81 ± 0.76  Developmental: **G1:** 3.00 ± 0.63  Behavior: **G1:** 3.31 ± 0.38  Total: **G1:** 3.09 ± 0.43  **Aggression and/or self-injury, n:**  **G1:** 3/6  **G2:** 2/10  **G3:** 5/10  **G4:** 4/6 | **ERS score, time 4, mean ± SD:**  Communication: **G1:** 4.10 ± 0.37 **G2:** 2.57 ± 0.58 **G3:** 2.74 ± 0.76 **G4:** 2.20 ± 0.72  **G1/G2/G3/G4:** *P* = 0.0003  **G1/G2:** *P* < 0.05  **G1/G3:** *P* < 0.05  **G1/G4:** *P* < 0.05  **G1/BL:** *P* = 0.0003  Structure: **G1:** 4.14 ± 0.29 **G2:** 2.20 ± 0.57 **G3:** 2.69 ± 0.41 **G4:** 2.28 ± 0.10 **G1/G2/G3/G4:** *P* = 0.0001  **G1/G2:** *P* < 0.05  **G1/G3:** *P* < 0.05  **G1/G4:** *P* < 0.05  **G1/BL:** *P* = 0.0002  Socialization: **G1:** 3.78 ± 0.53 **G2:** 2.40 ± 0.80 **G3:** 2.76 ± 0.69 **G4:** 2.33 ± 0.73 **G1/G2/G3/G4:** *P* = 0.0057  **G1/G2:** *P* < 0.05  **G1/G3:** *P* < 0.05  **G1/G4:** *P* < 0.05  **G1/BL:** *P* = 0.0014  Developmental: **G1:** 4.12 ± 0.24 **G2:** 2.68 ± 0.84 **G3:** 3.20 ± 0.48 **G4:** 2.50 ± 0.33 **G1/G2/G3/G4:** *P* = 0.0025  **G1/G2:** *P* < 0.05  **G1/G3:** *P* = NS  **G1/G4:** *P* < 0.05  **G1/BL:** *P* = 0.0006 |

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| **Interventions for Adolescents and Young Adults with Autism Evidence Table (continued)** | | | | |
| **Study**  **Description** | **Intervention** | **Inclusion/Exclusion**  **Criteria/Population** | **Baseline**  **Measures** | **Outcomes** |
| Van Bourgondien et al., 2003 (continued) | **Concomitant therapies:** Receiving at-least one medication for behavioral control, %:  **Total:** 53  Behavior control medica-tions, mean ± SD: **G1:** 1.5 ± 1.4 **G2:** 0.3 ± 0.5 **G3:** 1.4 ± 2.0 **G4:** 1.7 ± 2.0  **N at enrollment:**  **G1:** 6  **G2:** 10  **G3:** 10  **G4:** 6  N at followup:  **G1:** 6  **G2:** 10  **G3:** 10  **G4:** 6 |  |  | Behavior: **G1:** 4.43 ± 0.37 **G2:** 2.29 ± 0.76 **G3:** 2.8 ± 0.32 **G4:** 2.71 ± 0.38 **G1/G2/G3/G4:** *P* = 0.0001  **G1/G2:** *P* < 0.05  **G1/G3:** *P* < 0.05  **G1/G4:** *P* < 0.05  **G1/BL:** *P* = 0.0001  Total: **G1:** 4.11 ± 0.31 **G2:** 2.67 ± 0.60 **G3:** 3.04 ± 0.34 **G4:** 2.85 ± 0.35 **G1/G2/G3/G4:** *P* = 0.0001  **G1/G2:** *P* < 0.05  **G1/G3:** *P* < 0.05  **G1/G4:** *P* < 0.05  **G1/BL:** *P* = 0.0001  **Global ratings, mean ± SD:**  Programming: **G1:** 5.00 ± 0.00  **G2:** 2.25 ± 0.89 **G3:** 3.00 ± 1.10 **G4:** 2.60 ± 0.89 **G1/G2/G3/G4:** *P* = 0.0001  **G1/G2:** *P* < 0.05  **G1/G3:** *P* < 0.05  **G1/G4:** *P* < 0.05  Desirability: **G1:** 135.83 ± 4.02  **G2:** 69.13 ± 25.89  **G3:** 75.36 ± 35.28  **G4:** 33.6 ± 24.2 **G1/G2/G3/G4:** *P* = 0.0001  **G1/G2:** *P* < 0.05  **G1/G3:** *P* < 0.05  **G1/G4:** *P* < 0.05  **G2/G3:** *P* = NS  **G2/G4:** *P* < 0.05  **G3/G4:** *P* < 0.05 |

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| **Interventions for Adolescents and Young Adults with Autism Evidence Table (continued)** | | | | |
| **Study**  **Description** | **Intervention** | **Inclusion/Exclusion**  **Criteria/Population** | **Baseline**  **Measures** | **Outcomes** |
| Van Bourgondien et al., 2003 (continued) |  |  |  | **Family satis-faction survey, community involvement, mean ± SD:**  **G1:** 5.0 ± 0.0 (n=5)  **G3:**3.10 ± 1.44 (n=3)  **G4:** 3.33 ± 0.58  (n=10)  **G1/G3:** P < 0.05 **G1/G4:** P = 0.13  **Skills index, mean ± SD:**  **G1:** 3.5 ± 1.5  **G2:** 3.3 ± 2.1  **G3:**3.1 ± 2.1  **G4:** 2.6 ± 1.8  **Index of negative behaviors, mean ± SD:**  **G1:** 1.8 ± 0.3  **G2:** 1.4 ± 0.6  **G3:**1.6 ± 0.5  **G4:** 1.6 ± 0.6  **G1/G2:** *P* = 0.05  **Negative behavior observations, mean ± SD:**  **G1:** 16.8 ± 6.8  **G2:** 20.4 ± 11.7  **G3:**16.0 ± 12.8  **G4:** 24.2 ± 12.5  **Negative behavior observations without stereo-typies, mean ± SD:**  **G1:** 0.7 ± 0.6  **G2:** 4.2 ± 5.8  **G3:**2.0 ± 2.3  **G4:** 6.5 ± 9.0  **Harms:**  NR |

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| **Interventions for Adolescents and Young Adults with Autism Evidence Table (continued)** | | | | |
| **Study**  **Description** | **Intervention** | **Inclusion/Exclusion**  **Criteria/Population** | **Baseline**  **Measures** | **Outcomes** |
| Author:  Garcia-Villamisar et al., 2000†, 2002\*  Country:  Spain, Germany  Enrollment period:  1996-2000†\*  Funding:  Horizon Program of European Union, Cosejería de Asuntos Sociales de la Comunidad Autónoma de Madrid (Spain)  Author industry relationship disclosures:  NR  **Design:**  Nonrandomized controlled trial | **Intervention:**  Sheltered and supported community-based work environments\*  **Intervention target:**  To analyze the differential impact of two modalities of work on clinical symptom evolution between 1996 & 1999†  **Groups:**  **G1:** Sheltered work group (SHW)†\*  **G2:** Supported work group (SPW)†\*  **Primary outcome:**  NR  **Treatment duration:** Average length of community employment: 30 months for an average of 20 hours/week  **Frequency of contact during study:**  Beginning and end of program  **Last followup post-treatment:**  Immediately post-treatment†  5 years from start of program\*  **Measure of treatment fidelity/adherence reported:**  **Co-interventions held stable during treatment:**  **Concomitant therapies:** NR  **N at enrollment:**  **G1:** 26  **G2:** 25  N at followup:  **G1:** 26  **G2:** 21 | Inclusion criteria:   * Diagnosis of autism * Provision of informed consent * For G2, sheltered workshop enrollment prior to participation in supported work, no severe behavior problems, acceptable professional and vocational abilities   Exclusion criteria:   * See inclusion   **Age, yrs, mean ± SD: G1:** 21.07 ± 4.18 **G2:** 21.64 ± 3.75  **IQ, Leiter (total score), mean ± SD: G1:** 55.52 ± 14.43 **G2:** 57.41 ± 15.01  **Gender, n:**  Male:  **G1:** 18  **G2:** 21  Female:  **G1:** 8  **G2:** 4  DSM-based diagnostic approach reported:   * Yes (DSM-IV & CARS) | **QoL QNR score, mean ± SD:\***  Environmental control:  **G1:** 10.00 ± 2.23 **G2:** 10.80 ± 2.50  **G1/G2:** *P* = NS  Community involvement:  **G1:** 11.88 ± 3.01 **G2:** 13.28 ± 3.22 **G1/G2:** *P* = NS  Perception of personal change: **G1:** 7.50 ± 1.03 **G2:** 8.00 ± 0.93 **G1/G2:** *P* = NS  Total Score:  **G1:** 29.53 ± 5.26 **G2:** 31.40 ± 6.94 **G1/G2:** *P* = NS  **CARS score, mean ± SD:**†  **G1:** 35.26 ± 6.51 **G2:** 32.23 ± 8.59 | **QoL QNR score, mean ± SD:\***  Environmental control:  **G1:** 10.82 ± 2.26 **G2:** 13.04 ± 2.03 **G1/G2:** *P* < 0.002  **G2/BL:** *P* < 0.001  Community Involvement :  **G1:** 12.35 ± 3.01 **G2:** 14.04 ± 1.71 **G1/G2:** *P* < 0.01  **G2/BL:** *P* = 0.187  Perception of Personal Change: **G1:** 7.62 ± 1.62 **G2:** 8.95 ± 1.30 **G1/G2:** *P* < 0.008  **G2/BL:** *P* < 0.007  Total score:  **G1:** 30.76 ± 5.51 **G2:** 35.96 ± 3.43 **G1/G2:** *P* < 0.0001  **G2/BL:** *P* < 0.001    **CARS score, mean ± SD:**†  **G1:** 38.26 ±7.40 **G2:** 32.19 ± 7.26  **G1/BL:** *P* < 0.006 **G2/BL:** *P* = 0.71  **Harms:**  NR |

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| **Interventions for Adolescents and Young Adults with Autism Evidence Table (continued)** | | | | |
| **Study**  **Description** | **Intervention** | **Inclusion/Exclusion**  **Criteria/Population** | **Baseline**  **Measures** | **Outcomes** |
| Author:  Remington et al.,  2001  Country:  Canada  Enrollment period:  NR  Funding:  Ontario Mental Health Foundation  Author industry relationship disclosures:  NR  Design:  Double blind, placebo controlled randomized crossover design | **Intervention:**  Clomipramine: 25 mg at bedtime for 2 days, 25 mg 2 times/day for 2 days, 25 mg 3 times/day for 2 days, and 50 mg twice a day; doses then increased in 25 mg increments every 3-4 days as clini-cally indicated; planned treatment period: 7 weeks (actual mean 4.5 weeks)  Haloperidol: 0.25 mg at bedtime for 2 days, 0.25 mg 2 times/day for 2 days, 0.25 mg 3 times/day for 2 days, and 0.5 mg twice a day; doses then increased in 0.5 mg increments every 3- 4 days as clinically indi-cated; planned treatment period: 7 weeks (actual mean 5.8 weeks)  Placebo: planned treatment period: 7 weeks (actual mean 5.4 weeks); placebo also administered for 1 week before first phase and between each treatment phase  **Intervention target:**  Treatment of autistic disorder  **Primary outcome:**  NR  **Groups:**  **G1:** study participants  **G1a:** clomipramine phase  **G1b:** haloperidol phase  **G1c:** placebo phase  **Treatment duration:**  Each phase 7 weeks (total 21 weeks)  **Frequency of contact during study:**  Every two weeks  **Last followup post-treatment:**  Immediately post-treatment | Inclusion criteria:   * DSM-IV diagnosis of autism confirmed independently by two investigators * A recommendation based on initial assessment of pharmacotherapy * Evidence haloperidol or clomipramine had not been used previously * If haloperidol or clomipramine had been used previously, an adequate therapeutic trial was not completed   Exclusion criteria:   * See inclusion criteria   **Age, yrs, mean (range): G1:** 16.3 (10-36)  **Mental age:** NR  **Gender, n (%):**  Male:  **G1:** 30 (83.3)  Female:  **G1:** 6 (16.7)  DSM-based diagnostic approach reported:  Yes | **CARS score, mean ± SD:**  **G1:** 41.8 ± 7.1  **DOTES score, mean ± SD:**  **G1:** 0.6 ± 2.2  **ESRS score, mean ± SD:**  **G1:** 6.6 ± 6.7  **ABC score, mean:**  Irritability:  **G1:** NR\*  Lethargy:  **G1:** NR\*  Stereotypy:  **G1:** NR\*  Hyperactivity:  **G1:** NR\*  Inappropriate speech:  **G1:** NR\* | **CARS score, mean ± SD:**  **G1a:** 37.8 ± 8.7  **G1b:** 36.7 ± 6.1  **G1c:** 39.4 ± 7.0  **G1a/G1b/G1c:**  *P* = 0.05  **G1a/BL:** *P* = NS  **G1b/BL:** *P* < 0.05  **G1c/BL:** *P* = NS  **DOTES score, mean ± SD:**  **G1a:** 2.0 ± 2.9  **G1b:** 2.3 ± 3.3  **G1c:** 0.8 ± 1.7 **G1a/G1b/G1c:**  *P* = NS  **ESRS score, mean ± SD:**  **G1a:** 10.3 ± 7.3  **G1b:** 7.8 ± 5.8  **G1c:** 7.9 ± 7.1  **G1a/G1b/G1c:**  *P* = NS  **ABC score, mean:**  Irritability:  **G1a:** NR\*  **G1b:** NR\*  **G1c:** NR\* **G1a/G1b/G1c:**  *P* = 0.03  **G1a/BL:** *P* = NS  **G1b/BL:** *P* < 0.05  **G1c/BL:** *P* = NS  Lethargy:  **G1a:** NR\*  **G1b:** NR\*  **G1c:** NR\* **G1a/G1b/G1c:**  *P* = NS  Stereotypy:  **G1a:** NR\*  **G1b:** NR\*  **G1c:** NR\* **G1a/G1b/G1c:**  *P* = NS |

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| **Interventions for Adolescents and Young Adults with Autism Evidence Table (continued)** | | | | |
| **Study**  **Description** | **Intervention** | **Inclusion/Exclusion**  **Criteria/Population** | **Baseline**  **Measures** | **Outcomes** |

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| Remington et al.,  2001 (continued) | **Measure of treatment fidelity/adherence reported:**  Yes  **Co-interventions held stable during treatment:**  Yes  **Concomitant therapies:**  NR  **N at enrollment:**  **G1a:** 32  **G1b:** 33  **G1c:** 32  N at followup:  **G1a:** 12  **G1b:** 23  **G1c:** 21  **G1a/G1b/G1c:** *P* < 0.001 |  |  | Hyperactivity:  **G1a:** NR\*  **G1b:** NR\*  **G1c:** NR\* **G1a/G1b/G1c:**  *P* = 0.01  **G1a/BL:** *P* = NS  **G1b/BL:** *P* < 0.05  **G1c/BL:** *P* = NS  Inappropriate speech:  **G1a:** NR\*  **G1b:** NR\*  **G1c:** NR\* **G1a/G1b/G1c:**  *P* = NS  **Harms:**  Discontinued early due to behavioral problems only:  **G1a:** 8  **G1b:** 3  **G1c:** 10  Discontinued early due to physiologic effects and behavioral problems:  **G1a:** 4  **G1b:** 1  **G1c:** 0  Discontinued early due to physiologic effects only:  **G1a:** 8  **G1b:** 6  **G1c:** 1  Fatigue or lethargy:  **G1a:** 4  **G1b:** 5  **G1c:** 0  Tremors:  **G1a:** 2  **G1b:** 0  **G1c:** 0  Tachycardia:  **G1a:** 1  **G1b:** 0  **G1c:** 0 |

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| **Interventions for Adolescents and Young Adults with Autism Evidence Table (continued)** | | | | |
| **Study**  **Description** | **Intervention** | **Inclusion/Exclusion**  **Criteria/Population** | **Baseline**  **Measures** | **Outcomes** |
| Remington et al.,  2001 (continued) |  |  |  | Insomnia:  **G1a:** 1  **G1b:** 0  **G1c:** 0  Diaphoresis:  **G1a:** 1  **G1b:** 0  **G1c:** 0  Nausea or vomiting:  **G1a:** 1  **G1b:** 0  **G1c:** 0  Decreased appetite:  **G1a:** 1  **G1b:** 0  **G1c:** 0  Preexisting right bundle branch block:  **G1a:** 1  **G1b:** 0  **G1c:** 0  Dystonia:  **G1a:** 0  **G1b:** 1  **G1c:** 0  Depression:  **G1a:** 0  **G1b:** 1  **G1c:** 1  Persistent nosebleeds:  **G1a:** 0  **G1b:** 0  **G1c:** 1 |

**Interventions for Adolescents and Young Adults with Autism Evidence Table (continued)**

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| **Study**  **Description** | **Intervention** | **Inclusion/Exclusion**  **Criteria/Population** | **Baseline**  **Measures** | **Outcomes** |

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| **Author:**  Silver et al.,  2001  **Country:**  UK  **Enrollment period:**  NR  **Funding:**  NR  **Author industry relationship disclosures:**  NA  **Design:**  RCT | **Intervention:**  School-based Emotion Trainer computer inter-vention, 10 daily half hour computer sessions (used mean 8.4 times, range 2-15 times)  **Intervention target:**  Better recognition and prediction of emotional responses in others  **Primary outcome:**  NR  **Groups:**  **G1:** computer sessions and standard lessons  **G2:** standard lessons only  **Treatment duration:**  2-3 weeks  **Frequency of contact during study:**  Daily during school  **Last followup post-treatment:**  End of treatment  **Measure of treatment fidelity/adherence reported:**  Yes  **Co-interventions held stable during treatment:**  NR  **Concomitant therapies:**  NR  **N at enrollment:**  **G1:** 12  **G2:** 12  **N at followup:**  **G1:** 10  **G2:** 11 | **Inclusion criteria:**  Clear diagnosis of autistic spectrum disorder  Age equivalent ≥ 7 years on the British Picture Vocabulary Scale  Chronological age 10-18  **Exclusion criteria:**  See inclusion criteria  **Age, yrs, mean ± SD:**\* **G1:** 13.9 ± 0.9 **G2:** 14.75 ± 2.0  **Mental age, BPVS age equivalent, yrs, mean ± SD: G1:** 10.67 ± 2.25 **G2:** 12.0 ± 3.33  **Gender:**  NR  **DSM-based diagnostic approach reported:**  No | **Facial Expression Photographs, total error score, mean ± SD:**  **G1:** 4.27 ± 1.85  **G2:** 4.45 ± 2.34  **Emotion Recognition Cartoons, total error score, mean ± SD:**  **G1:** 4.36 ± 3.35  **G2:** 3.27 ± 1.79  **Strange Stories, compound Likert score, mean ± SD:**  **G1:** 18.3 ± 16.4  **G2:** 20.8 ± 22.9 | **Facial Expression Photographs, total error score, mean:**  **G1:** NR\*\*  **G2:** NR\*\*  ANOVA: group X time *P* = NS; time  *P* = 0.029  **Emotion Recognition Cartoons, total error score, mean:**  **G1:** NR\*\*  **G2:** NR\*\*  ANOVA: group X time *P* = 0.041  **Strange Stories, compound Likert score, mean:**  **G1:** NR\*\*  **G2:** NR\*\*  ANOVA: group X time *P* = 0.016  **Harms:**  NR |

**Comments:**

\* Chronological age means and SD converted from years/months to years

\*\* Values are only represented graphically.

The teaching tasks were computer based and the assessment tasks were paper based.

The number of times a child used the computer program significantly correlated with an improvement in score on the Emotion Recognition Cartoons and the Strange Stories but not with improvement on the Facial Expression Photographs.

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| **Interventions for Adolescents and Young Adults with Autism Evidence Table (continued)** | | | | |
| **Study**  **Description** | **Intervention** | **Inclusion/Exclusion**  **Criteria/Population** | **Baseline**  **Measures** | **Outcomes** |
| **Author:**  Mawhood et al.,  1999  **Country:**  UK  **Enrollment period:**  NR  **Funding:**  Nuffield Foundation, Department of Employment, National Autistic Society  **Author industry relationship disclosures:**  NR  **Design:**  Prospective cohort study | **Intervention:**  Supported employment scheme: upon suitable job identification, full time support worker provided for 1st 2-4 weeks; support decreased to 1-2 times/ week during the 2nd month; further reduction in support so by the 4th month, occasional planned meetings (a support worker could be contacted anytime during an emergency)  **Intervention target:**  Employment  **Primary outcome:**  Employment  **Groups:**  **G1:** supported employment scheme  **G2:** no employment support  **Treatment duration:**  2 years (mean ± SD 17.03 ± 6.64 months)  **Frequency of contact during study:**  Daily for 2-4 weeks, then 1-2 times/week during 2nd month, then occasional meetings during 4th month  **Last followup post-treatment:**  Immediately post treatment  **Measure of treatment fidelity/adherence reported:**  No  **Co-interventions held stable during treatment:**  NR  **Concomitant therapies:**  NR | **Inclusion criteria:**  Formal diagnosis of autism or Asperger syndrome  IQ ≥ 70 on either WAIS performance or verbal scale  Actively seeking work  Able to travel indepen-dently and prepared to work within the greater London area (**G1**) or outside greater London area (**G2**)  Capable of eventually maintaining employment with minimal support  No additional psychiatric or physical problems that would adversely affect employability  **Exclusion criteria:**  See inclusion criteria  **Age, yrs, mean ± SD: G1:** 31.1 ±9.1 **G2:** 28.0 ± 6.1  **Mental age, mean ± SD:** WORD reading accuracy test:  **G1:** 16.6 ± 1.5  **G2:** NR  WORD comprehension test:  **G1:** 13.8 ± 3.6  **G2:** NR  WORD spelling test:  **G1:** 16.2 ± 2.1  **G2:** NR  British Ability Scales Number subtest  **G1:** 12.9 ± 1.8  **G2:**  NR  **IQ, mean ± SD:**  WAIS verbal IQ:  **G1:** 104.1 ± 17.3  **G2:** 101.6 ± 0.50  WAIS performance IQ:  **G1:** 91.6 ± 15.7  **G2:** 92.2 ± 0.12 | **Employed, n:**  **G1:** 8  **G2:** 3  **Time in work, % (range):**  **G1:** 18.58 (0-100)  **G2:** 10.79 (0-100)  **G1/G2:** *P* = 0.35  **Rosenberg Self-Esteem Inventory score, mean ± SD:**  **G1:** 21.79 ± 4.78  **G2:** 21.50 ± 4.43 | **Employed, n (%):**  **G1:** 19 (63.3)  **G2:** 5 (25)  **G1/BL:** *P* = 0.009  **G2/BL:** *P* = 0.69  **G1+G2/BL:** *P* = 0.01  **Employment, n:**  Permanent jobs:  **G1:** 9  **G2:** 3  Temporary/  seasonal jobs:  **G1:** 10  **G2:** 2  **Time to find employment, months, mean (range):**  **G1:** 8.7 (6-23)  **G2:** 8.4 (3-16)  **Hours worked/**  **week, mean (range):**  **G1:** 31.3 (16-38.75)  **G2:** 36.5 (35-40)  **G1/G2:** *P* = 0.506  **Wages/hour, £,** **mean (range):**  **G1:** 5.71 (3.71-9.49)  **G2:** 4.14 (3.83-4.5)  **G1/G2:** *P* = 0.024  **Type of jobs found, n:**  Administrative/ clerical:  **G1:** 16  **G2:** 1  Computing:  **G1:** 2  **G2:** 0  Photography laboratory:  **G1:** 1  **G2:** 0 |

**Interventions for Adolescents and Young Adults with Autism Evidence Table (continued)**

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| **Study**  **Description** | **Intervention** | **Inclusion/Exclusion**  **Criteria/Population** | **Baseline**  **Measures** | **Outcomes** |
| Mawhood et al.,  1999 (continued) | **N at enrollment:**  **G1:** 30  **G2:** 20  **N at followup:**  **G1:** 30  **G2:** 17 | WAIS full-scale IQ:  **G1:** 98.8 ± 16.3  **G2:** 97.7 ± 0.22  BPVS:  **G1:** 94.7 ± 21.2  **G2:** 91.8 ± 0.46  EOWPVT:  **G1:** 99.3 ± 19.1  **G2:** 98.6 ± 0.13  **Gender, n:**  Male:  **G1:** 27  **G2:** 20  Female:  **G1:** 3  **G2:** 0  **DSM-based diagnostic approach reported:**  No |  | Sales support:  **G1:** 1  **G2:** 0  Warehouse/ factory:  **G1:** 2  **G2:** 1  Postman/messen-ger/outdoor:  **G1:** 0  **G2:** 3  **Time in work, % (range):**  **G1:** 26.81 (0-87.5) (n=26)  **G2:** 7.61 (0-82.3) (n=17)  **G1/BL:** *P* = 0.22  **G2/BL:** *P* = 0.91  **G1+G2/BL:** *P* = 0.02  **Rosenberg Self-Esteem Inventory score, mean ± SD:**  **G1:** 22.08 ± 4.00  **G2:** 22.25 ± 5.12  **Harms:**  NR |

**Comments:**

More individuals in the control group (10% vs. 3%) had attended special needs courses (*P* = NS).

**Interventions for Adolescents and Young Adults with Autism Evidence Table (continued)**

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| --- | --- | --- | --- | --- |
| **Study**  **Description** | **Intervention** | **Inclusion/Exclusion**  **Criteria/Population** | **Baseline**  **Measures** | **Outcomes\*\*** |
| **Author:**  McDougle et al.,  1998  **Country:**  US  **Enrollment period:**  June 1994 to February 1997  **Funding:**  Public Health Service, National Alliance for Research in Schizophrenia and Depression, Theodore and Vada Stanley  Foundation, Connecticut Department  of Mental Health and Addiction Services, Research Unit on Pediatric Psycho-pharmacology (RUPP), NIMH  **Author industry relationship disclosures:**  NR  **Design:**  RCT, double blind; subsequent open label trial | **Intervention:**  Risperidone starting at 1 mg/day, gradually increasing by 1 mg daily every 3-4 days to a maximum dosage of 10 mg/day, twice daily as tolerated for at least 7 weeks. Those treated with placebo subsequently given a 12 week open label trial of risperidone.  **Intervention target:** CGI global Improvement, repetitive behavior, aggression, sensory motor behaviors, social relationship to people, affectual reactions, sensory responses, language, overall behavioral symptoms of autism and mood states  **Primary outcome:**  NR  **Groups:**  **G1:** risperidone  **G2:** placebo  **G2a:** open label trial of risperidone  **Daily dose, mean ± SD:**  **G1:** 2.9 ± 1.4  **G2:** 3.9 ± 1.5  **Treatment duration:**  12 weeks  **Frequency of contact during study:**  Baseline, end of weeks 4, 8, and 12  **Last followup post-treatment:**  Immediately post-treatment  **Measure of treatment fidelity/adherence reported:**  NA  **Co-interventions held stable during treatment:**  Yes | **Inclusion criteria:**  Diagnosis of autism or PDD-NOS  Moderate CGI scores  Y-BOCS compulsion (repetitive behavior) subscale score > 10  SIB-Q score ≥ 25  Ritvo-Freeman Real-life Rating Scale overall score ≥ 0.20  **Exclusion criteria:**  Met DSM-IV criteria for schizophrenia or had psychotic symptoms  Significant acute medical condition  **Age, yrs, mean ± SD: G1:** 26.0 ± 6.7  **G2:** 29.7 ± 7.8  **Mental age, full scale IQ, mean ± SD:**  **G1:** 55.5 ± 26.8  **G2:** 52.9 ± 22.1  **Gender, n:**  Male:  **G1:** 13  **G2:** 9  Female:  **G1:** 2  **G2:** 7  **DSM-based diagnostic approach reported:**  Yes (DSM-IV, ADOS, ADI) | **CGI scale score,** **mean (SE): G1:** 4 (0)  **G2:** 4 (0)  **G2a:** 4 (0)  **Modified Y-BOCS score, mean (SE):**  **G1:**16.15 (3.58) **G2:**14.29 (3.50) **G2a:** 14.27 (2.92)  **SIB-Q total score,**  **mean (SE):**  **G1:** 47.8 (19.5) **G2:** 37.7 (11.9) **G2a:** 32.43 (15.89)  **Ritvo-Freeman subscale score,** **mean (SE):** Sensory motor behaviors:  **G1:** 0.79 (0.65) **G2:** 0.71 (0.58) **G2a:** 0.68 (0.48)  Social relationship to people:  **G1:** NR  **G2:** NR  **G2a:** NR  Affectual reactions:  **G1:** 1.02 (0.39) **G2:** 0.78 (0.49) **G2a:** 0.75 (0.53)  Sensory responses:  **G1:** NR  **G2:** NR  **G2a:** 0.70 (0.38)  Language:  **G1:** NR  **G2:** NR  **G2a:** NR  **Ritvo-Freeman overall behavioral symptom score,** **mean (SE):**  **G1:** 0.60 (0.44)  **G2:** 0.53 (0.41)  **G2a:** 0.50 (0.38) | **CGI scale score, 12 weeks, mean (SE):**  **G1:** 2.54 (1.27) **G2:** 4 (0.79)  **G2a:** 2.47 (1.06)  **G1/G2:** *P* < 0.001  **G2a/BL:** *P* < 0.001  **Responders (CGI much improved or very much improved),** **n (%):**  **G1:** 8/14 (57)  **G2:** 0 **G2a:** 9/15 (60)  **Modified Y-BOCS score, 12 weeks, mean (SE):**  **G1:** 12.77 (3.63) **G2:** 14.35 (3.02)  **G2a:** 11.47 (3.64)  **G1/G2:** *P* < 0.02 **G2a/BL:** *P* < 0.03  **SIB-Q total score, 12 weeks,** **mean (SE): G1:** 24.2 (9.5) **G2:** 32.8 (15.0) **G2a:** 23.07 (13.45)  **G1/G2:** *P* < 0.01 **G2a/BL:** *P* < 0.05  **Ritvo-Freeman subscale score,** **12 weeks,** **mean (SE):**  Sensory motor behaviors:  **G1:** 0.38 (0.38) **G2:** 0.64 (0.49) **G2a:** 0.44 (0.31) **G1/G2:** *P* < 0.007 **G2a/BL:** *P* < 0.04  Social relation-ship to people:  **G1:** NR  **G2:** NR  **G2a:** NR  **G1/G2:** *P* = NS **G2a/BL:** *P* = NS |

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| **Interventions for Adolescents and Young Adults with Autism Evidence Table (continued)** | | | | |
| **Study**  **Description** | **Intervention** | **Inclusion/Exclusion**  **Criteria/Population** | **Baseline**  **Measures** | **Outcomes\*\*** |
| McDougle et al.,  1998 (continued) | **Concomitant therapies, n:**  Chloral hydrate (2 g/day) for agitation: NR  **N at enrollment:**  **G1:**15  **G2:** 16  **G2a:** 16  **N at followup:\***  **G1:** 12  **G2:** 12  **G2a:** 15 |  | **VAS mood scores, clinician rated, mean (SE)**:  Anxious or nervous:  **G1:** 70.4 (16.4)  **G2:** 66.6 (22.1)  **G2a:** 62.67 (26.04)  Depressed: **G1:** 23.8 (17.6) **G2:** 23.1 (28.1)  **G2a:** NR  Irritable:  **G1:** 51.8 (23.2)  **G2:** 31.5 (24.4)  **G2a:** 27.33 (23.75)  Calm:  **G1:** NR  **G2:** NR  **G2a:** 26.67 (22.25)  Restless:  **G1:** NR  **G2:** NR  **G2a:** 54.67 (28.25) | Affectual reactions:  **G1:** 0.35 (0.37) **G2:** 0.82 (0.57) **G2a:** 0.33 (0.28) **G1/G2:** *P <* 0.003 **G2a/BL:** *P* < 0.007  Sensory responses:  **G1:** NR  **G2:** NR  **G2a:** 0.44 (0.36) **G1/G2:** *P* = NS (*P* < 0.02; n=24)  **G2a/BL:** *P* < 0.004  Language:  **G1:** NR  **G2:** NR  **G2a:** NR  **G1/G2:** *P* = NS **G2a/BL:** *P* = NS  **Ritvo-Freeman overall behavioral symptom score, 12 months,** **mean (SE):**  **G1:** 0.32 (0.27) **G2:** 0.45 (0.41) **G2a:** 0.27 (0.33) **G1/G2:** *P <* 0.05 **G2a/BL:** *P* < 0.003  **VAS mood scores, 12 months, clinician rated, mean (SE):\*\*\***  Anxious or nervous:  **G1:** 42.3 (28.0) **G2:** 60.0 (28.5)  **G1/G2:** *P <* 0.02 (*P <* 0.03; n=24)  **G2a:** 37.93 (29.95)  **G2a/BL:** *P <* 0.02 |

**Interventions for Adolescents and Young Adults with Autism Evidence Table (continued)**

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| **Study**  **Description** | **Intervention** | **Inclusion/Exclusion**  **Criteria/Population** | **Baseline**  **Measures** | **Outcomes\*\*** |
| McDougle et al.,  1998 (continued) |  |  |  | Depressed:  **G1:** 8.5 (11.4)  **G2:** 19.4 (25.4)  **G2a:** NR  **G1/G2:** *P <* 0.03 (*P <* 0.08; n=24)  **G2a/BL:** *P* = NS  Irritable:  **G1:** 21.8 (20.4) **G2:** 22.3 (24.9) **G1/G2:** *P* < 0.01  **G2a:** 14.13 (16.27)  **G2a/BL:** *P* < 0.05  Calm:  **G1:** NR  **G2:** NR  **G2a:** 46.60 (24.01)  **G1/G2:** *P* = NS **G2a/BL:** *P <* 0.01  Restless:  **G1:** NR  **G2:** NR  **G2a:** 27.00 (22.82)  **G1/G2:** *P* = NS **G2a/BL:** *P <* 0.03  **Harms:**  At least one adverse event, n (%):  **G1:** 13/15 (87)  **G2:** 5/16 (31)  Sedation:  **G1:** 9  **G2:** 0  Agitation: **G1:** 2  **G2:** 5  Enuresis:  **G1:** 2  **G2:** 0  Weight gain: **G1:** 2  **G2:** 0 |

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| **Interventions for Adolescents and Young Adults with Autism Evidence Table (continued)** | | | | |
| **Study**  **Description** | **Intervention** | **Inclusion/Exclusion**  **Criteria/Population** | **Baseline**  **Measures** | **Outcomes\*\*** |
| McDougle et al.,  1998 (continued) |  |  |  | Dyspepsia, diarrhea, constipation: **G1:** 1  **G2:** 0  Abnormal gait, **G1:** 1  **G2:** 0 |

**Comments:**

\* 24/31 completed the entire 12 week study; of these 14/24 were 13-30 years old (**G1:** 8; **G2:** 6). 7/31 completed only 1-4 weeks of treatment; of these 5/7 were 13-30 years old (**G1:** 2; **G2:** 3).

\*\* Where available, P-values reported for drug X time interaction are from ANCOVAs using baseline and 12-week values; P-values reported for VAS are from 2-way ANOVAs with repeated measures for all patients that completed at least 4 weeks (n=30; ITT analysis) and for completers (n=24). The latter value was also included if only one of the tests was significant. P-values reported for the open label trial from 1-way ANOVA with repeated measures.

\*\*\* No other significant difference over time reported for any of the other mood measures.

**Interventions for Adolescents and Young Adults with Autism Evidence Table (continued)**

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| --- | --- | --- | --- | --- |
| **Study**  **Description** | **Intervention** | **Inclusion/Exclusion**  **Criteria/Population** | **Baseline**  **Measures** | **Outcomes** |
| **Author:**  McDougle et al.,  1998  **Country:**  US  **Enrollment period:**  NR  **Funding:**  Pfizer, NIH, National Alliance for Research on Schizophrenia and Depression, Theodore and Vada Stanley Research Foundation, Connecticut Department of Mental Health and Addiction Services  **Author industry relationship disclosures:**  NR  **Design:**  Prospective case series | **Intervention:**  Sertraline, started at 50 mg/day with further increases of 50 mg/day every week (maximum 200 mg/day as tolerated, attained within 3 weeks). Actual dose, mg, mean ± SD (range): 122.0 ± 60.5 (50-200)  **Intervention target:**  Reduced repetitive thoughts/behavior and aggression; enhancement of social relatedness  **Primary outcome:**  NR  **Groups:**  **G1:** sertraline  **Ga:** autistic disorder  **Gb:** Asperger’s disorder  **Gc:** PPD NOS  **Treatment duration:**  12 weeks  **Frequency of contact during study:**  0, 4, 8 and 12 weeks  **Last followup post-treatment:**  Immediately post-treatment  **Measure of treatment fidelity/adherence reported:**  No  **Co-interventions held stable during treatment:**  NR  **Concomitant therapies, n:\***  1000-3000 mg chloral hydrate: 4  **N at enrollment:**  **G1:** 42  **G1a:** 22  **G1b:** 6  **G1c:** 14  **N at followup:**  **G1:** 37 | **Inclusion criteria:**  DSM-IV diagnosis of ASD  Y-BOCS score > 15 (verbal patients) or > 7 (nonverbal patients)  S-IBQ score ≥ 25  Ritvo-Freeman Real-Life rating scale overall score ≥ 0.20 or VABS Maladaptive Behavior subscale part 1 score ≥ 14 or VABS Maladaptive Behavior subscale part 2 score ≥ 5  Psychotropic drug-free for ≥ 4 weeks before start of trial  **Exclusion criteria:**  DSM-IV diagnosis of psychotic or bipolar disorder  Significant medical problem (e.g., seizure)  **Age, yrs, mean ± SD: G1:** 26.1 ± 5.8  **Mental age:**  NR  **IQ, mean ± SD:**  **G1:** 60.5 ± 22.7  **Gender, n (%):**  Male:  **G1:** 27 (64)  Female:  **G1:** 15 (36)  **DSM-based diagnostic approach reported:**  Yes | **CGI scale score, mean ± SD:**  **G1a:** NA  **G1b:** NA  **G1c:** NA  **Y-BOCS score, mean** **± SD:**  Total:  **G1a:** 16.5 ± 6.7  **G1b:** 25.7 ± 41.1  **G1c:** 18.2 ± 4.8  Obsession  subscale:  **G1a:** 2.6 ± 5.1  **G1b:** 12.5 ± 2.7  **G1c:** 4.2 ± 5.7  Compulsion subscale:  **G1a:** 13.9 ± 4.1  **G1b:** 13.2 ± 2.7  **G1c:** 14.0 ± 3.6  **SIB-Q total score, mean** **± SD:**  **G1a:** 32.7 ± 16.5  **G1b:** 17.5 ± 7.7  **G1c:** 36.2 ± 16.4  **Ritvo-Freeman behavioral symptom score, mean ± SD:**  Overall:  **G1a:** 0.48 ± 0.49  **G1b:** 0.26 ± 0.38  **G1c:** 0.77 ± 0.53  Subscale I:  **G1a:** 0.71 ± 0.59  **G1b:** 0.33 ± 0.20  **G1c:** 0.71 ± 0.52  Subscale II:  **G1a:** 0.21 ± 0.72  **G1b:** -0.17 ± 0.45  **G1c:** 0.42 ± 0.57  Subscale III:  **G1a:** 0.81 ± 0.52  **G1b:** 0.40 ± 0.28  **G1c:** 1.12 ± 0.56  Subscale IV:  **G1a:** 0.71 ± 0.52  **G1b:** 0.66 ± 0.59  **G1c:** 0.88 ± 0.53 | **CGI scale score, 12 weeks, mean ± SD:**  **G1a:** 2.1 ± 1.0  **G1b:** 4.0 ± 0.0  **G1c:** 2.3 ± 0.9  **G1/BL:** *P* = 0.0001  **Responders (CGI much improved or very much improved), n (%):**  **G1:** 24 (57)  **G1a:** 15 (68)  **G1b:** 0  **G1c:** 9 (64)  **Y-BOCS score, 12 weeks, mean** **± SD:**  Total:  **G1a:** 11.5 ± 5.8  **G1b:** 27.8 ± 5.3  **G1c:** 14.8 ± 5.7  **G1/BL:** *P* = 0.005  Obsession subscale:  **G1a:** 2.2 ± 4.2  **G1b:** 13.8 ± 3.0  **G1c:** 3.8 ± 5.2  **G1/BL:** *P* = NS  Compulsion subscale:  **G1a:** 9.3 ± 3.8  **G1b:** 14.0 ± 3.6  **G1c:** 11.0 ± 3.3  **G1/BL:** *P* = 0.0001  **SIB-Q total score, 12 weeks, mean** **± SD:**  **G1a:** 15.5 ± 9.5  **G1b:** 18.8 ± 7.7  **G1c:** 20.2 ± 12.8  **G1/BL:** *P* = 0.0001 |

**Interventions for Adolescents and Young Adults with Autism Evidence Table (continued)**

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| **Study**  **Description** | **Intervention** | **Inclusion/Exclusion**  **Criteria/Population** | **Baseline**  **Measures** | **Outcomes** |

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| McDougle et al.,  1998 (continued) |  |  | Subscale V:  **G1a:** -0.02 ± 0.53  **G1b:** -0.50 ± 0.30  **G1c:** 0.15 ± 0.51  **VABS Maladaptive Behavior subscales score, mean ± SD:**  **G1a:** 27.0 ± 9.4  **G1b:** 19.8 ± 8.6  **G1c:** 28.3 ± 10.8 | **Ritvo-Freeman behavioral symptom score, 12 weeks, mean ± SD:**  Overall:  **G1a:** 0.17 ± 0.29  **G1b:** 0.29 ± 0.36  **G1c:** 0.33 ± 0.33  **G1/BL:** *P* = 0.0001  Subscale I:  **G1a:** 0.40 ± 0.33  **G1b:** 0.33 ± 0.20  **G1c:** 0.37 ± 0.33  **G1/BL:** *P* = 0.001  Subscale II:  **G1a:** -0.10 ± 0.53  **G1b:** 0.02 ± 0.26  **G1c:** 0.15 ± 0.49  **G1/BL:** *P* = NS  Subscale III:  **G1a:** 0.38 ± 0.25  **G1b:** 0.37 ± 0.32  **G1c:** 0.61 ± 0.49  **G1/BL:** *P* = 0.001  Subscale IV:  **G1a:** 0.32 ± 0.36  **G1b:** 0.57 ± 0.54  **G1c:** 0.46 ± 0.47  **G1/BL:** *P* = 0.0001  Subscale V:  **G1a:** -0.11 ± 0.45  **G1b:** -0.42 ± 0.23  **G1c:** -0.09 ± 0.46  **G1/BL:** *P* = NS  **VABS Maladaptive Behavior subscales score, 12 weeks, mean ± SD:**  **G1a:** 13.8± 6.0  **G1b:** 20.2 ± 8.2  **G1c:** 19.5 ± 9.1  **G1/BL:** *P* = 0.000 |
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| **Interventions for Adolescents and Young Adults with Autism Evidence Table (continued)** | | | | |
| **Study**  **Description** | **Intervention** | **Inclusion/Exclusion**  **Criteria/Population** | **Baseline**  **Measures** | **Outcomes** |
| McDougle et al.,  1998 (continued) |  |  |  | **Harms:**  Withdrew due to persistent agita-tion despite chloral hydrate: 3  Adverse effects, completers, n:  Anorexia:  **G1:** 1  Headache:  **G1:** 1  Tinnitus:  **G1:** 1  Alopecia:  **G1:** 1  Weight gain:  **G1:** 3  Sedation:  **G1:** 1  Anxiety/agitation: **G1:** 2 |

**Comments:**

\* Chloral hydrate 500 to 1000 mg could be administered to any patient up to four times in 24 hours for agitation, as needed. No other psychotropic drugs were administered to the patients during the study.

CGI was assigned by the research nurse with input from the patient (when possible) and the patient’s treatment team.

No adverse cardiovascular, extrapyramidal, or proconvulsant effects were identified.

Statistical analyses: ANOVA of time effects; ANOVA by ASD subtype also available in Table 1 for all scales and subscales

**Interventions for Adolescents and Young Adults with Autism Evidence Table (continued)**

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| **Study**  **Description** | **Intervention** | **Inclusion/Exclusion**  **Criteria/Population** | **Baseline**  **Measures** | **Outcomes** |
| Author:  Brodkin et al., 1997  Country:  US  Enrollment period:  NR  Funding:  National Alliance for Research on Schizophrenia and Depression, Connecticut Department of Mental Health and Addiction Services, NIH, CoCensys Pharmaceuticals  Author industry relationship disclosures:  NR  Design:  Case series (open label) | **Intervention:**  Open label treatment with Clomipramine. Initial dose 50 mg daily, increased by 50 mg every 3 or 4 days to a maximum dosage of 250 mg daily, as tolerated, if maximal clinical response was not obtained. The maximum dosage of clomipramine was attained within 3 weeks, and patients received this dose for a minimum of 9 weeks.  Average daily dose (mg): 139.4 ± 50.4  **Intervention target:**  Total repetitive thoughts and behavior, aggression, aspects of social relatedness, such as eye contact and verbal responsiveness, change in these specific symptom clusters over time, autistic behavior, full-scale IQ, CGI, and adverse effects  **Primary outcome:**  CGI  **Groups:**  **G1:** clomipramine  **Ga:** responders (CGI scores of 1 = "very much improved" or 2 = "much improved" at the end of week 12)  **Gb:** nonresponders  **Treatment duration:**  12 weeks  **Frequency of contact during study:**  Every 4 weeks  **Last followup post-treatment:**  End of 12 weeks  **Measure of treatment fidelity/adherence reported:**  Yes | Inclusion criteria:   * Principal diagnosis of PDD * Did not meet criteria for any other DSM-IV Axis I or Axis II disorder other than mental retardation   Exclusion criteria:   * DSM-IV criteria for a psychotic disorder * Abused illicit substances within the previous 6 months * Serum pregnancy test positive (females) * Significant acute medical condition   **Age, yrs, mean ± SD: G1:** 30.2 ± 7.0 (n=35)  **G1a:** 30.7 ± 7.0  **G1b:** 29.6 ± 6.4  **Mental age:** NR  **Gender, n :**  Male:  **G1:** 24  Female:  **G1:** 11  DSM-based diagnostic approach reported:  Yes (DSM-IV, ADI, ADOS) | **IQ (full scale), mean ± SD:** **G1:** 64.6 ± 27.2 **G1a:** 62.7 ± 28.4  **G1b:** 67.0 ± 26.5  **G1a/G1b:** *P* = NS\*\*  **ABC score, mean ± SD:**  **G1:** 101.4 ± 17.5 **G1a:** 107.3 ± 17.2  **G1b:** 94.2 ± 15.4 **G1a/G1b:** *P* = NS\*\*  **Y-BOCS** **score, mean ± SD:**  Total:  **G1a:** 18.7 ± 6.8 **G1b:** 17.9 ± 6.2  Obsession subscale, verbal patients (n=18):  **G1a:** 10 ± 6.8 **G1b:** 6.7 ± 6.2  Compulsion subscale:  **G1a:** 13.7 ± 3.3 **G1b:** 13.9 ± 2.5  **Brown Aggression scale total score score, mean ± SD:**  **G1a:** 10.6 ± 7.4 **G1b:** 6.5 ± 4.1  **Ritvo-Freeman Real-life rating overall score, mean ± SD:**  **G1a:** 0.72 ± 0.54 **G1b:** 0.45 ± 0.43 | **CGI score, mean ± SD:**  **G1a:** 1.89 ± 0.32 **G1b:** 3.8 ± 0.86 **G1/BL:** *P* < 0.001  **G1a/G1b:** *P* < 0.001  **Y-BOCS score, mean ± SD:**  Total:  **G1a:** 9.1 ± 3 **G1b:** 17.3 ± 7.8  **G1/BL:** *P* < 0.001  **G1a/G1b:** *P* < 0.001  Obsession subscale, verbal patients (n=18): **G1a:** 4.4 ± 2.8 **G1b:** 8 ± 6.6  **G1/BL:** *P* = NS  **G1a/G1b:** *P* < 0.001  Compulsion subscale:  **G1a:** 6.9 ± 2.1 **G1b:** 12.5 ± 3.3 **G1/BL:** *P* < 0.001  **G1a/G1b:** *P* < 0.001  **Brown Aggression scale total score score, mean ± SD:**  **G1a:** 3.7 ± 3.6 **G1b:** 6.4 ± 4.6  **G1/BL:** *P* < 0.001  **G1a/G1b:** *P* < 0.001  **Ritvo-Freeman Real-life rating overall score, mean ± SD:**  **G1a:** 0.18 ± 0.24 **G1b:** 0.44 ± 0.40  **G1/BL:** *P* < 0.001  **G1a/G1b:** *P* < 0.001 |

**Interventions for Adolescents and Young Adults with Autism Evidence Table (continued)**

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| **Study**  **Description** | **Intervention** | **Inclusion/Exclusion**  **Criteria/Population** | **Baseline**  **Measures** | **Outcomes** |
| Brodkin et al., 1997 (continued) | **Co-interventions held stable during treatment:**  Yes  **Concomitant therapies, n:\***  Carbamazepine (800mg): **G1:** 2  Phenobarbitol:  **G1:** 1  **N at enrollment:**  **G1:** 35  N at followup:  **G1:** 33  **G1a:** 18  **G1b:** 15 |  |  | **Harms, n:**  Clinically significant side effects:  **G1:** 13/33  Dropped out due to AE (agitation and cramping, respectively):  **G1:** 2  Weight gain:  **G1a:** 3  **G1b:** 0  Constipation:  **G1a:** 2  **G1b:** 1  Seizure:\*\*\*  **G1a:** 1  **G1b:** 2  Sedation:  **G1a:** 1  **G1b:** 1  Agitation:  **G1a:** 0  **G1b:** 1  Anorgasmia:  **G1a:** 1  **G1b:** 0 |

**Comments:**

\* Chloral hydrate (500-1000 mg) could be administered up to 4 times a day for agitation, as needed.

\*\* No significant relationship between treatment response (**G1a** vs. **G1b**) as defined by either ABC score (<78 vs. ≥78) or IQ (≤70 vs. >70)

\*\*\* Two patients had a prior history of seizures.

Results by disease diagnosis type not included here, as there were no significant differences among diagnostic subtypes in the change any outcomes over the course of treatment.

No significant difference in clomipramine dosage between **G1a** (131 ± 53 mg daily) and **G1b** (150 ± 47 mg daily).

Significant improvement over time was identified for each subscale of the Ritvo-Freeman Real-Life Rating Scale (n=33), including Sensory Motor Behaviors (*P* < 0.001), Social Relationship to People (*P* < 0.001), Affectual Reactions (*P* < 0.01), Sensory Responses (*P* < 0.001), and Language (*P* < 0.02).

**Interventions for Adolescents and Young Adults with Autism Evidence Table (continued)**

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| **Study**  **Description** | **Intervention** | **Inclusion/Exclusion**  **Criteria/Population** | **Baseline**  **Measures** | **Outcomes** |
| Author:  Bebko et al., 1996  Country:  Canada  Enrollment period:  1993  Funding:  Sharp Canada  Author industry relationship disclosures:  NR  Design:  Prospective case series | **Intervention:**  Facilitated communication (FC) using multiple methods for 6 weeks with up to 7 months of follow up data  **Intervention target:**  Communication  **Primary outcome:**  Percentage of correct responses on three designs: setwork (visual stimulus with picture cards and words), headphones (audio stimulus with separate audio channels for student and facilitator), and receptive vocabulary (tasks from PPVT-R). The experimental conditions for the setwork design were combinations of intervention with FC vs. no FC and facilitators that were informed vs. not informed. The experimental conditions for the headphones design were the facilitator receiving the same word as the student, a different word, or a neutral word.  **Groups:**  **G1:** All participants all receivingfacilitated communication  **G2:** All participants none receiving facilitated communication  **Ga:** facilitator informed  **Gb:** facilitator not informed  **Treatment duration:**  6 weeks; follow up 5 to 7 months (with additional FC use)  **Frequency of contact during study:**  NR | Inclusion criteria:   * From one of four class-rooms of a regional program specializing in autism * Consent obtained   Exclusion criteria:   * See inclusion criteria   **Age, yrs, mean (range): G1&G2:** 13 (6-21)  **Mental age, range: G1:** 1 year 3 months to 4 years 0 months  **Gender, n (%):**  Male:  **G1&G2:** 15 (75)  Female:  **G1&G2:** 5 (25)  DSM-based diagnostic approach reported:  Yes | **Setwork design, % correct responses:**  **G1a:** 56.86  **G1b:** 30.00 **G2a:** 36.71 **G2b:** 35.71  **G1a/G1b/G2a/G2b:**  *P* = 0.0138  **Headphones design, % correct reponses:\***  **G1a:** NR  **G1b:** NR **G2a:** NR **G2b:** NR  **G1a/G1b/G2a/G2b:**  *P* = NS  **Receptive vocabulary design, % correct responses:\***  **G1a:** NR  **G1b:** NR **G2a:** NR **G2b:** NR  **G1a/G1b/G2a/G2b:**  *P* = NS | **Setwork design, follow up, % correct responses:**  **G1a:** 75.00  **G1b:** 25.57  **G2a:** 53.57  **G2b:** 32.57  **G1a/BL:** *P* = 0.345  **Ga/Gb:** *P* < 0.01 **Ga/BL:** *P* < 0.03  **Headphones design, % correct reponses:**  **G1a:** NR  **G1b:** NR **G2a:** NR **G2b:** NR  **G1/BL:** *P* > 0.30  **Harms:**  NR |

**Interventions for Adolescents and Young Adults with Autism Evidence Table (continued)**

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| **Study**  **Description** | **Intervention** | **Inclusion/Exclusion**  **Criteria/Population** | **Baseline**  **Measures** | **Outcomes** |
| Bebko et al., 1996 (continued) | **Last followup post-treatment:**  Immediately post-treatment  **Measure of treatment fidelity/adherence reported:**  No  **Co-interventions held stable during treatment:**  NR  **Concomitant therapies:**  NR  **N at enrollment:**  **G1&G2:** 20  N at 5-7 month followup:  **G1&G2:** 7 |  |  |  |

**Comments:**

\* Data reported graphically

Baseline results taken over initial 6 weeks

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| **Interventions for Adolescents and Young Adults with Autism Evidence Table (continued)** | | | | |
| **Study**  **Description** | **Intervention** | **Inclusion/Exclusion**  **Criteria/Population** | **Baseline**  **Measures** | **Outcomes** |

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| Author:  McDougle et al.,  1996  Country:  US  Enrollment period:  NR  Funding:  NIH, Connecticut Dept. of Mental Health and Addiction Services, Korczak Foundation for  Autism and Related Disorders  Author industry relationship disclosures:  NR  Design:  Double-blind, placebo-controlled randomized crossover trial | **Intervention:**  Acute tryptophan depletion. 24 hours of a low tryptophan diet followed by tryptophan-free amino acid drink or sham (amino acid drink with tryptophan added). Behavior measurements were taken at baseline, 180, 300, and 420 minutes after the amino acid drink. Patients resumed normal diet until crossover experiment occurred 7 days later.  **Intervention target:**  Autistic behaviors  **Primary outcome:**  Biochemical measures (plasma free and total tryptophan) and  behavioral measures including change in global severity, symptoms of autism (RFRLRS), repetitive thoughts and re behaviors, and 18 other behavioral parameters scored by VAS.  **Groups:**  **G1:** acute tryptophan depletion  **G2:** sham  **Treatment duration:**  2 days; 7 days between treatment and sham  **Frequency of contact during study:**  1 week  **Last followup post-treatment:**  Immediately post-treatment  **Measure of treatment fidelity/adherence reported:**  NR  **Co-interventions held stable during treatment:**  NR | Inclusion criteria:   * Adults with autistic disorder * No psychotropic drugs for at least 5 weeks   Exclusion criteria:   * Identifiable cause of autism * Seizures * Positive pregnancy test   **Age, yrs, mean ± SD (range): G1+G2:** 30.5 ±8.5 (20-53)  **Mental age (WAIS-R IQ) mean** ± SD**: G1+G2:** 90.8 ± 23.5  **Gender, n (%):**  Male:  **G1+G2:** 16 (80)  Female:  **G1+G2:** 4 (20)  DSM-based diagnostic approach reported:  Yes | **Plasma tryptophan, micromol/L, mean ± SD:**  Free:  **G1:** 16.0 ± 2.1  **G2:** 18.2 ± 10.7  Total:  **G1:** 105.1 ± 43.7  **G2:** 115 ± 29.9  **RFRLRS subscale 1-5 scores:**  **G1:** NR  **G2:** NR  **G1/G2:** *P* = NS  **Repetitive thoughts severity scale score:**  **G1:** NR  **G2:** NR  **G1/G2:** *P* = NS  **Repetitive behaviors severity scale score:**  **G1:** NR  **G2:** NR  **G1/G2:** *P* = NS  **Behavioral VAS scores:**  **G1:** NR  **G2:** NR  **G1/G2:** *P* = NS | **Plasma tryptophan, micromol/L, mean ± SD:**  Free:  **G1:** 5.0 ± 4.4  **G2:** 33.6 ± 7.0 **G1/BL:** *P* < 0.001 **G2/BL:** *P* < 0.003  Total:  **G1:** 14.7 ± 4.5  **G2:** 199.0 ± 53.5 **G1/BL:** *P* < 0.001 **G2/BL:** *P* < 0.001  **Significant global worsening of behavior symptoms, n (%):**  **G1:** 11/17 (65)  **G2:** 0/17 (0)  **G1/G2:** *P* = 0.001  **RFRLRS sensory motor behaviors subscale score:\*\***  **G1:** NR  **G2:** NR  **G1/G2:** *P* < 0.05  **RFRLRS subscale 2-5 scores:**  **G1:** NR  **G2:** NR  **G1/G2:** *P* = NS  **Repetitive thoughts severity scale score:\*\***  **G1:** NR  **G2:** NR  **G1/G2:** *P* = NS  **Repetitive behaviors severity scale score:\*\***  **G1:** NR  **G2:** NR  **G1/G2:** *P* = NS |

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| **Interventions for Adolescents and Young Adults with Autism Evidence Table (continued)** | | | | |
| **Study**  **Description** | **Intervention** | **Inclusion/Exclusion**  **Criteria/Population** | **Baseline**  **Measures** | **Outcomes** |
| McDougle et al.,  1996 (continued) | **Concomitant therapies:**  NR\*  **N at enrollment:**  **G1=G2:** 20  N at followup:  **G1=G2:** 17 |  |  | **Behavioral VAS scores:**  Calm:  **G1:** NR  **G2:** NR  **G1/G2:** *P* < 0.01  Happy:  **G1:** NR  **G2:** NR  **G1/G2:** *P* < 0.03  Other behaviors:  **G1:** NR  **G2:** NR  **G1/G2:** *P* = NS  **Harms:**  Nausea and vomiting:  **G1:** 1  **G2:** 2 |

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| **Interventions for Adolescents and Young Adults with Autism Evidence Table (continued)** | | | | |
| **Study**  **Description** | **Intervention** | **Inclusion/Exclusion**  **Criteria/Population** | **Baseline**  **Measures** | **Outcomes** |
| Author:  McDougle et al.,  1996  Country:  US  Enrollment period:  September 1990 to December 1993  Funding:  NIH, Connecticut Dept. of Mental Health and Addiction Services, Korczak Foundation for  Autism and Related Disorders, Solvay Pharmaceuticals  Author industry relationship disclosures:  NR  Design:  Double-blind placebo-controlled RCT | **Intervention:**  Fluvoxamine maleate, 12 weeks, started at 50 mg daily and titrated up by 50 mg every 3-4 days to a maximum of 300 mg/day, in the inpatient and outpatient settings.  **Intervention target:**  Symptoms of autism  **Primary outcome:**  Repetitive thoughts and behaviors (Y-BOCS), maladaptive behavior (VMBS), aggression (BAS), global improve-ment (CGI), symptoms of autism (RFRLRS)  **Groups:**  **G1:** fluvoxamine  **G2:** placebo  **Treatment duration:**  12 weeks  **Frequency of contact during study:**  4 weeks  **Last followup post-treatment:**  Immediately post-treatment  **Measure of treatment fidelity/adherence reported:**  No  **Co-interventions held stable during treatment:**  NR  **Concomitant therapies:**  NR\*  **N at enrollment:**  **G1:** 15  **G2:** 15  N at followup:  **G1:** 15  **G2:** 15 | Inclusion criteria:   * Adults with autistic disorder * No psychotropic drugs for at least 6 weeks   Exclusion criteria:   * Met criteria for schizophrenia or had psychotic symptoms * Substance abuse in the last 6 months * Notable medical illness including seizures * Pregnancy test positive   **Age, yrs, mean ± SD: G1:** 30.1 ± 7.1 **G2:** 30.1 ± 8.4  **Mental age (IQ), mean ± SD:**  **G1:** 82.5 ± 26.8 **G2:** 77.3 ± 33.1  **Gender, n:**  Male:  **G1:** 13  **G2:** 14  Female:  **G1:** 2  **G2:** 1  DSM-based diagnostic approach reported:  Yes | **Y-BOCS score, mean ± SD:**  **G1:** 21.4 ± 7.3  **G2:** 21.5 ± 6.8  **VMBS score, mean ± SD:**  **G1:** 19.5 ± 6.8  **G2:** 22.3 ± 8.1  **BAS score, mean ± SD:**  **G1:** 9.3 ± 10.8  **G2:** 12.3 ± 12.3  **CGI score:\*\***  **G1+G2:** moderate severity  **RFRLRS overall score, mean ± SD:**  **G1:** NR  **G2:** NR | **Y-BOCS score, 12 weeks, mean ± SD:**  **G1:** 13.7 ± 9.1  **G2:** 21.9 ± 6.7  **G1/BL:** *P* < 0.003  **G2/BL:** *P* = NS  **G1/G2:** *P* < 0.001  **VMBS score, 12 weeks, mean ± SD:**  **G1:** NR  **G2:** NR  **G1/G2:** *P* < 0.001  **BAS score, 12 weeks, mean ± SD:\*\***  **G1:** NR  **G2:** NR  **G1/G2:** *P* < 0.001  **CGI score, 12 weeks, mean ± SD:\*\***  **G1:** NR  **G2:** NR  **G1/G2:** *P* < 0.001  **Responders, CGI**  **much improved or very much improved, n (%):** **G1:** 8/15 (53)  **G2:** 0/15 (0) **G1/G2:** *P* = 0.001  **RFRLRS overall score, mean ± SD:\*\***  **G1:** NR  **G2:** NR  **G1/G2:** *P* < 0.03  **Harms:**  Mild sedation:  **G1:** 2  **G2:** 1  Nausea:  **G1:** 3  **G2:** 1 |

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| **Interventions for Adolescents and Young Adults with Autism Evidence Table (continued)** | | | | |
| **Study**  **Description** | **Intervention** | **Inclusion/Exclusion**  **Criteria/Population** | **Baseline**  **Measures** | **Outcomes** |
| Author:  Willemsen-Swinkels et al.,  1995  Country:  Netherlands  Enrollment period:  NR  Funding:  Janusz Korczak Foundation, DuPont Pharma  Author industry relationship disclosures:  NR  Design:  Placebo controlled crossover study | **Intervention:**  2 week single blind placebo period; 3rd week, 1 dose of naltrexone-hydrochloride (100 mg) or placebo followed by 6 days placebo;\* 4 weeks naltrexone or placebo;  4 week wash out; then crossover to alternate treatment  1 dose 100 mg (1.61 ± 0.24 mg/kg), then:  1st cohort: 50 mg daily (0.80 ± 0.13 mg/kg)  2nd cohort: 150 mg daily (2.45 ± 0.33 mg/kg)  **Intervention target:**  Self-injurious behavior  **Primary outcome:**  Self-injurious behavior  **Groups:**  **G1:** 1st cohort, 50 mg naltrexone hydrochloride  **G2:** 2nd cohort, 150 mg naltrexone hydrochloride  **G3:** 1st cohort, placebo  **G4:** 2nd cohort, placebo  **Ga:** autism  **Treatment duration:**  4 weeks  **Frequency of contact during study:**  Daily  **Last followup post-treatment:**  Immediately post-treatment  **Measure of treatment fidelity/adherence reported:**  No  **Co-interventions held stable during treatment:**  Yes  **Concomitant therapies, n:**  Antiepileptics: 5; Neuroleptics: 11 | Inclusion criteria:   * Two clinicians agreed that the subject had fulfilled the set of DSM-III-R criteria for autistic disorder as a child and still fulfilled when current behavior was considered * Social impairment had to be more serious than could be expected on the basis of the level of mental retardation only   Exclusion criteria:   * See inclusion criteria   **Age, yrs, mean ± SD: Total:** 29 ± 6.0  **Mental age:** NR  **Gender, n (%):**  Male:  **Total:** 27  Female:  **Total:** 6  DSM-based diagnostic approach reported:  Yes  Diagnosis, n:  ASD: 24  SIB: 26  Down syndrome: 1 Hunter’s syndrome: 1 Congenital anomalies of unknown origin: 6  Congenital hydrocephalus: 1 | **ABC stereotypy factor, mean ± SD:**  **G1a+G2a:** 9.7 ± 4.7  **G3a+G4a:** 8.3 ± 5.2 | **ABC stereotypy factor, mean ± SD:**  2 weeks:  **G1a+G2a:** 10.2 ± 4.6  **G3a+G4a:** 8.8 ± 5.0  4 weeks:  **G1a+G2a:** 10.0 ± 4.7  **G3a+G4a:** 9.0 ± 4.8  **G1+G2/G3+G4:** *P* = 0.018  **G1+G3/G2+G4:** *P* = NS  **CGIS rating score, mean ± SD:**  4 weeks:  **G1:** NR\*\*  **G2:** NR\*\*  **G3:** NR\*\*  **G4:** NR\*\*  **G1+G2/G3+G4:** *P* = 0.03  **G1+G3/G2+G4:** *P* = NS  **Harms, n:**  Withdrew due to adverse effect:  **G1:** 1  **G2:** 0  Sedation:  **G1:** 0  **G2:** 3  Increase in SIB and acting out behavior:  **G1:** 1  **G2:** 0  Nausea and tiredness:  **G1:** 1  **G2:** 0 |

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| **Interventions for Adolescents and Young Adults with Autism Evidence Table (continued)** | | | | |
| **Study**  **Description** | **Intervention** | **Inclusion/Exclusion**  **Criteria/Population** | **Baseline**  **Measures** | **Outcomes** |
| Willemsen-Swinkels et al.,  1995 (continued) | **N at enrollment:**  **G1=G3:** 19  **G2=G4:** 14  **G1a:** 13  **G2a:** 11  N at followup:  **G1=G3:** 18  **G2=G4:** 14  **G1a:** 12  **G2a:** 11 |  |  |  |

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| **Interventions for Adolescents and Young Adults with Autism Evidence Table (continued)** | | | | |
| **Study**  **Description** | **Intervention** | **Inclusion/Exclusion**  **Criteria / Population** | **Baseline**  **Measures** | **Outcomes** |
| Author:  Eberlin et al., 1993  Country:  US  Enrollment period:  NR  Funding:  NR  Author industry relationship disclosures:  NR  Design:  Prospective case series | **Intervention:**  Facilitated communication  **Intervention target:**  Communication  **Primary outcome:**  Number of correct answers with screened facilitation (the facilitator is blind to what the subject sees). Questions were vocabulary (Stanford-Binet: Fourth Edition) and knowledge of personal information (Personal Interview Questionnaire).  **Groups:**  **G1:** facilitated communication  **Treatment duration:**  20 hours total (40 half-hour sessions, 1-2 sessions per day, 3-5 days/week)  **Frequency of contact during study:**  3-5 days/week over course of study  **Last followup post-treatment:**  Immediately post-treatment  **Measure of treatment fidelity/adherence reported:**  No  **Co-interventions held stable during treatment:**  NR  **Concomitant therapies:**  NR  **N at enrollment:**  **G1:** 21  N at followup:  **G1:** 21 | Inclusion criteria:   * Diagnosis of autism * Subjective impression by a speech therapist that FC may be successful * No history of property destruction * Available to participate   Exclusion criteria:   * See inclusion criteria   **Age, yrs, mean (range): G1:** 15.5 (11.3-20.2)  **Mental age, years, range:**  Social-communicative skills:  **G1:** 0.3-3.2  Adaptive skills composite score:  **G1:** 1.5-5.8  Receptive language:  **G1:** 1.4-5.3  Expressive language:  **G1:** 0.7-6.3  Verbal language development scale:  **G1:** 1.6-5.1  Mild to moderate mental retardation:  **G1:** 2  Moderate to severe mental retardation  **G1:** 11  Severe to profound mental retardation:  **G1:** 8  **Gender, n (%):**  Male:  **G1:** 20 (95)  Female:  **G1:** 1 (5)  DSM-based diagnostic approach reported:  Yes | **Stanford-Binet vocabulary, no facilitation, correct answers, median (range):**  **G1:** 7 (0-14)  **Stanford-Binet vocabulary, initial screened facilitation, correct answers, median (range):**  **G1:** 0 (0-14)  **Personal interview, no facilitation, correct answers, median (range):**  **G1:** 1 (0-13)  **Personal interview, initial screened facilitation, correct answers, median (range):**  **G1:** 0 (0-2)  **Combined score, no facilitation, correct answers, median:**  **G1:** 8  **Combined score, no facilitation, correct answers:**  0:  **G1:** 5  1:  **G1:** 2  2 or more:  **G1:** 14  **Combined Score, initial screened facilitation, correct answers, median:**  **G1:** 0  **Combined score, no facilitation, correct answers:**  0:  **G1:** 19  1:  **G1:** 0  2 or more:  **G1:** 2 | **Stanford-Binet vocabulary, screened facilitation, correct answers, median (range):**  **G1:** 0 (0-14)  **Stanford-Binet vocabulary, unscreened facilitation, correct answers, median (range):**  **G1:** NR  **Personal Interview, screened facilitation, correct answers, median (range):**  **G1:** 0 (0-10)  **Personal Interview, unscreened facilitation, correct answers, median (range):**  **G1:** NR  **Combined Score, screened facilitation, correct answers, median:**  **G1:** 0  **Combined score, screened facilitation, correct answers:**  0:  **G1:** 15  1:  **G1:** 4  2 or more:  **G1:** 2  **Answered more questions correctly with screened FC than with pre-FC communication skills:**  **G1:** 1 |

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| **Interventions for Adolescents and Young Adults with Autism Evidence Table (continued)** | | | | |
| **Study**  **Description** | **Intervention** | **Inclusion/Exclusion**  **Criteria/Population** | **Baseline**  **Measures** | **Outcomes** |
| Eberlin et al., 1993 (continued) |  |  | **Answered more questions correctly with screened FC than with pre-FC communication skills:**  **G1:** 0 | **Combined Score, unscreened facilitation, correct answers, median:**  **G1:** 1  **Combined score, screened facilitation, correct answers:**  0:  **G1:** 10  1:  **G1:** 9  2 or more:  **G1:** 2  **Answered more questions correctly with unscreened FC than with pre-FC communication skills:**  **G1:** 2  **Harms:**  NR |

**Interventions for Adolescents and Young Adults with Autism Evidence Table (continued)**

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| --- | --- | --- | --- | --- |
| **Study**  **Description** | **Intervention** | **Inclusion/Exclusion**  **Criteria/Population** | **Baseline**  **Measures** | **Outcomes** |
| **Author:**  Cook et al., 1992  **Country:**  US  **Enrollment period:**  1988 to 1990  **Funding:**  Harris Center for Developmental Studies, NIH, Adolescent Mental Health Academic Award, Autism Society of America in Indiana and Illinois  **Author industry relationship disclosures:**  NR  **Design:**  Retrospective case series | **Intervention:**  Fluoxetine administered to treat perseverative behavior; dose range: 20 mg every other day - 80 mg daily  **Intervention target:**  Improvement of Clinical Global Impression ratings  **Primary outcome:**  CGI  **Groups:**  **G1:** fluoxetine  **Treatment duration:**  Actual days taking drug: mean days ± SD (range): 189 ± 153 (11-426)  **Frequency of contact during study:**  Monthly clinic visit  **Last followup post-treatment:**  Immediately post-treatment  **Measure of treatment fidelity/adherence reported:**  No  **Co-interventions held stable during treatment:**  NR  **Concomitant therapies, n (%):**  Neuroleptics:  **G1:** 8 (35) Carbamazepine:  **G1:** 1 (4)  Lithium carbonate:  **G1:** 2 (9)  Clonidine and alprazolam:  **G1:** 1 (4)  Methylphenidate:  **G1:** 1 (4)  **N at enrollment:**  **G1:** 23  **N at followup:**  **G1:** 23 | **Inclusion criteria:**  ASD  Clinician assessment and diagnosis of perseverative behavior ranging from self-injurious behavior to complex rituals  **Exclusion criteria:**  See inclusion criteria  **Age, yrs, mean ± SD: G1:** 15.9 ±6.2  **Mental age:** NR  **Gender, n (%):**  Male:  **G1:** 18 (78)  Female:  **G1:** 5 (22)  **DSM-based diagnostic approach reported:**  Yes | **CGI, overall clinical severity, mean ± SD:**  **G1:** 5.7 ± 0.8  **CGI, severity of perseverative or compulsive behavior, mean ± SD:**  **G1:** 5.5 ± 1.5 | **CGI, overall clinical severity, mean ± SD:**  **G1:** 4.9 ± 1.1  **G1/BL:** *P* < 0.002  **CGI, overall clinical severity, improvement, n:**  **G1:** 15/23  **CGI, severity of perseverative or compulsive behavior, mean ± SD:**  **G1:** 4.7 ± 1.6  **G1/BL:** *P* < 0.005  **Harms, n (%):**  Hyperactivity/ restlessness/ agitation:  **G1:** 5 (22)  Insomnia:  **G1:** 4 (17)  Elated affect:  **G1:** 4 (17)  Decreased appetite:  **G1:** 4 (17)  Increased rate of screaming:  **G1:** 2 (9)  Increased socially inappropriate behavior:  **G1:** 1 (4)  Crying spells:  **G1:** 1 (4)  Yawning:  **G1:** 1 (4)  Maculopapular rash:  **G1:** 1 (4)  **CGI side effects, n (%):**  None:  **G1:** 10 (43) |

**Interventions for Adolescents and Young Adults with Autism Evidence Table (continued)**

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| **Study**  **Description** | **Intervention** | **Inclusion/Exclusion**  **Criteria/Population** | **Baseline**  **Measures** | **Outcomes** |
| Cook et al., 1992  (continued) |  |  |  | Do not significantly interfere with functioning:  **G1:** 8 (35)  Significantly interferes with functioning:  **G1:** 4 (17)  Outweighs therapeutic effect:  **G1:** 1 (4) |

**Comments:**

Data on 16 additional patients with mental retardation available in paper.

**Interventions for Adolescents and Young Adults with Autism Evidence Table (continued)**

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| **Study**  **Description** | **Intervention** | **Inclusion/Exclusion**  **Criteria/Population** | **Baseline**  **Measures** | **Outcomes** |

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| **Author:**  Elliott et al.,  1991  **Country:**  US  **Enrollment period:**  NR  **Funding:**  NR  **Author industry relationship disclosures:**  NR  **Design:**  Nonrandomized trial with crossover design | **Intervention:**  Analog language teaching sessions: conducted individually in clinical setting, three 15-minute sessions/week  Natural language teaching sessions: 3 participants in different training settings (garden, kitchen, shower room); three 45-minute sessions/week  **Intervention target:**  Language  **Primary outcome:**  NR  **Groups:**  **G1:** analog language teaching phase  **G2:** natural language teaching phase  **Treatment duration:**  1 month each phase  **Frequency of contact during study:**  Weekly  **Last followup post-treatment:**  8 weeks post-intervention  **Measure of treatment fidelity/adherence reported:**  Yes  **Co-interventions held stable during treatment:**  NR  **Concomitant therapies:**  NR  **N at enrollment:**  **G1:** 23  **G2:** 23  **N at followup:**  **G1:** 23  **G2:** 23 | **Inclusion criteria:**  DSM-III-R criteria for autism; severe mental retardation  Residential treatment program  **Exclusion criteria:**  See inclusion criteria  **Age, yrs, mean (range): G1=G2:** 26 (17-37)  **Mental age (Slosson Intelligence test and/or Bayley Scales of Infant Development), yrs, mean (range): G1=G2:** 3.2 (1.7-5.1)  **Gender, n (%):**  Male:  **G1=G2:** 19 (83)  Female:  **G1=G2:** 4 (17)  **DSM-based diagnostic approach reported:**  Yes | **Three dimensional objects identified, n:**  **G1:** NR  **G2:** NR  **Two dimensional representations identified, n:**  **G1:** NR  **G2:** NR | **Nouns generalized, post training, mean:**  **G1:** 15.7  **G2:** 12.8  **G1/G2:** *P* = NS  **Items retrained, 8 weeks, mean %:**  **G1=G2:** 92.2  **Harms:**  NR |

**Comments:**

The natural language teachings were longer than the analogue language teaching in recognition of a natural advantage of group versus individual instruction.

Paper also includes analysis of possible effect modification by sequence of training, intellectual level, and communicative modality.

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| **Interventions for Adolescents and Young Adults with Autism Evidence Table (continued)** | | | | |
| **Study**  **Description** | **Intervention** | **Inclusion/Exclusion**  **Criteria/Population** | **Baseline**  **Measures** | **Outcomes** |

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| Author:  Nelson et al.,  1980  Country:  US  Enrollment period:  NR  Funding:  Boston Univ.  Author industry relationship disclosures:  NR  Design:  Randomized crossover trial, unspecified randomization method | **Intervention:**  Four-step procedure to teach the shoe-lacing task in a clinical setting. Crossover between two treatment conditions (color-coded shoelace/ eyelet prompt and no prompt).  Followup experiment: assessment of preference for color-coded prompt versus position cues.  Initial training phase (10 trials) followed by a color-reversal phase (10 trials) that required a binary choice between color or position cues.  **Intervention target:**  Acquisition of an adaptive skill (a shoe lacing task).  **Primary outcome:**  NR  **Groups:**  **G1:** extra prompt first  **G2:** no extra prompt first  **Treatment duration:**  Until completion of the task (approximately 30 trials/session, one session/day)  **Frequency of contact during study:**  NA  **Last followup post-treatment:**  One followup session post-treatment but timing not specified  **Measure of treatment fidelity/adherence reported:**  NR  **Co-interventions held stable during treatment:**  NR  **Concomitant therapies:**  NR | Inclusion criteria:   * Autism diagnosis * Onset prior to 30 months of age * Five behavioral disturbances “characteristic of autism” (disturbances of perception, developmental rate, relating, speech and language, and mobility) * Inability to lace shoes   Exclusion criteria:   * See inclusion criteria   **Age, yrs, mean ± SD: G1:** 11.5 ± 3.0 **G2:** 13.1 ± 4.1  **Mental age, mean ± SD: G1:** 3.0 ± 4.1 **G2:** 3.1 ± 0.9  **Gender, n:**  Male:  **Total:** 13  Female:  **Total:** 7  DSM-based diagnostic approach reported:  NR (study pre-dates DSM-III) | **Number of trials to complete task, initial treatment condition, mean ± SD:**  **G1:** 108.7 ± 87.1  **G2:** 137.2 ± 110.7  **G1/G2:** *P* = NS | **Number of trials to complete task, cross-over treat-ment condition, mean ± SD:**  **G1:** 81.6 ± 80.7  **G2:** 15.9 ± 9.9  **G1/G2:** *P* < 0.05 ANOVA: inter-vention order effect (*P* < 0.01).  **Harms:**  NR |

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| **Interventions for Adolescents and Young Adults with Autism Evidence Table (continued)** | | | | |
| **Study**  **Description** | **Intervention** | **Inclusion/Exclusion**  **Criteria/Population** | **Baseline**  **Measures** | **Outcomes** |
| Nelson et al.,  1980 (continued) | **N at enrollment:**  **G1:** 10  **G2:** 10  N at followup:  **G1:** 10  **G2:** 10 |  |  |  |

**Abbreviations**

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| ABC | Aberrant Behavior Checklist |
| ADI | Autism Diagnostic Interview |
| ADOS | Autism Diagnostic Observation Schedule |
| AQ | Autism Spectrum Quotient |
| AS | Asperger syndrome |
| ASD | Autism Spectrum Disorders |
| BAS | Brown Aggression Scale |
| BL | Baseline |
| BPVS | British Picture Vocabulary Scale |
| CAM | Cambridge Mindreading |
| CARS | Childhood Autism Rating Scale |
| CGI | Clinical Global Improvement |
| COPM | Canadian Occupational Performance Measure |
| DISCUS | Dyskinesia Identification System Condensed User Scale |
| DSM | Diagnostic and Statistical Manual of Mental Disorders |
| EOWVPT | Expressive One Word Picture Vocabulary Test |
| ERS | Environmental Rating Scale |
| ES | Effect size |
| FATCAT | Functional Assessment Tool for Cognitive Assistive Technology |
| FC | Facilitated communication |
| FQS | Friendship Quality Scale |
| G | Group |
| HFA | High functioning autism |
| IEP | Individualized Education Plan |
| IQ | Intelligence quotient |
| mg | milligrams |
| N, n | Number |
| NA | Not applicable |
| N-CBRF | Nisonger Child Behavior Rating Form |
| NIH | National Institutes of Health |
| NR | Not reported |
| NS | Not significant |
| NSEC | Neuroleptic Side Effects Checklist |
| PPVT-R | Peabody Picture Vocabulary Test – Revised |
| QPQ | quality of play questionnaire |
| RFRLRS | Ritvo-Freeman Real-Life Rating Scale |
| SD | Standard deviation |
| SE | Standard error |
| SHW | Sheltered workgroup |
| SIB | Self-injurious Behavior |
| SIB-Q | Self-injurious Behavior Questionnaire |
| SPW | Supported workgroup |
| SRS | Social Responsiveness Scale |
| SSRS | Social Skills Rating Scale |
| TASSK | Test of Adolescent Social Skills Knowledge |
| VABS | Vineland Adaptive Behavior Scales |
| VAS | Visual analog scale |
| VMBS | Vineland Maladaptive Behavior Subscales |
| Y-BOCS | Yale-Brown Obsessive Compulsive Scale |
| Yrs | Years |