

Table 1.
Descriptive Statistics of Included Studies

Study name ^a	N (baseline FU)	Age (SD)	% female	Primary diagnosis	Comorbidity	Treatment	Baseline DOI (y)	FU duration (y)	Attrition rate	Outcome categories reported
Albus 2002 ^{51,52}	58–58	29.7 (9.1)	49.3%	Schizophrenia (100%)	NR	Butyrophenones (100%)	6.2 y	2 y; 5 y	30.0%	Executive functioning; language skills; motor skills and construction; overall cognition; processing speed; verbal memory; visual memory
Balanzá -Martínez 2005 ^{53,54}	47–47	33.4 (8.2)	21.3%	Schizophrenia (100%)	NR	Antipsychotics (100%); antidepressants (12.8%); benzodiazepines (31.9%); psychosocial rehabilitation (19.2%)	8.7 y	1 y; 3 y	9.6%	Attention and vigilance; executive functioning; language skills; motor skills and construction; overall cognition; processing speed; verbal memory; visual memory
Barnett 2007 ⁵⁵	26–26	41.9 (12.0)	29.3%	Schizophrenia (77.6%); schizoaffective disorder (15.5%); delusional disorder (6.9%)	NR	First-generation antipsychotics (29.3%); second-generation antipsychotics (70.7%)	16.5 y	0.2 y; 0.5 y; 1	35.6%	Executive functioning; motor skills and construction; visual memory
Bonner-Jackson 2010 ⁵⁶	84–84	22.9 (3.9)	44.2%	Schizophrenia (57.1%); other types of psychotic disorder (42.9%)	NR	NR	NR	2	7.8%	Overall cognition; processing speed
Bosnjak Kuharic 2021 ⁵⁷	129–129	24.0 (13.0)	36.4%	First episode psychotic disorder (100%)	NR	First-generation antipsychotics (34.9%); second-generation antipsychotics (93.8%); antidepressants (11.6%); anxiolytics (51.2%); mood stabilizers (23.3%)	1.0 y	1.5	18.9%	Executive functioning; language skills; motor skills and construction; overall cognition; processing speed; verbal memory; visual memory
Bowie 2008 ^{58–514}	317–317	67.7 (11.5)	37.5%	Schizophrenia (100%)	NR	Antipsychotics (99.7%)	41.2 y	1 y; 1.2 y; 2.1 y; 4 y; 6 y	31.2%	Language skills; motor skills and construction; overall cognition; verbal memory
Breier 2018 ⁵¹⁵	60–60	23.6 (4.9)	21.7%	Schizophrenia (68.3%); schizophreniform disorder (13.3%); schizoaffective disorder (8.3%); psychotic disorder NOS (10.1%)	NR	Antipsychotics (100%)	1.4 y	1 y	46.7%	Overall cognition
Buonocore 2018 ⁵¹⁶	60–60	34.9 (9.7)	45.3%	Schizophrenia (100%)	NR	Computer-assisted CRT (100%); SRT (100%); risperidone (23.0%); haloperidol (15.0%); clozapine (39.0%); olanzapine (7.0%); aripiprazole (8.0%); paliperidone (2.0%); fluphenazine (3.0%); chlorpromazine (3.0%)	10.8 y	5 y	6.3%	Executive functioning; language skills; motor skills and construction; overall cognition; processing speed; verbal memory
Chang 2014 ^{517–521}	93–93	31.5 (9.5)	57.1%	Schizophrenia (79.6%); schizophreniform disorder (14.0%); schizoaffective disorder (5.4%)	NR	First-generation antipsychotics (100%)	1.3 y	1 y; 2 y; 3 y	32.6%	Executive functioning; language skills; verbal memory; visual memory
Chanpattana 2010 ⁵²²	253–253	34.1 (8.0)	53.8%	Schizophrenia (100%)	NR	Electroconvulsive therapy (100%); flupenthixol (100%)	13.3 y	1.6 y	0.0%	Overall cognition

(continued)

Table 1 (continued).

Study name ^a	N (baseline FU)	Age (SD)	% female	Primary diagnosis	Comorbidity	Treatment	Baseline DOI (y)	FU duration (y)	Attrition rate	Outcome categories reported
Chen 2000 ⁵²³	50–43	48.9 (8.9)	30.2%	Schizophrenia (100%)	NR	NR	23.5 y	3 y	14.0%	Executive functioning; motor skills and construction; sensation and perception
Dal Santo 2020 ⁵²⁴	17–17	45.4 (8.1)	0.0%	Schizophrenia (100%)	NR	Clozapine (100%)	NR	2.9 y	0.0%	Overall cognition
Dempster 2017 ⁵²⁵	16–16	24.1 (7.2)	23.1%	First episode nonaffective psychosis (100%)	NR	Antipsychotics (23.1%)	2.0 y	1 y	0.0%	Executive functioning; verbal memory
Ekerholm 2012 ⁵²⁶	36–36	41.1 (7.9)	13.9%	Schizophrenia (100%)	NR	Antipsychotics (95.8%)	17.6 7	4.6 y	49.3%	Attention and vigilance; executive functioning; processing speed; verbal memory
Fett 2020 ^{527,528}	246–140	28.5 (8.5)	34.6%	Schizophrenia spectrum disorder (100%)	NR	NR	<0.5 y	2 y; 15 y; 19 y; 20 y	47.4%	Attention and vigilance; executive functioning; language skills; processing speed; verbal memory; visual memory
Galderisi 2020 ⁵²⁹	921–618	40.2 (10.7)	30.4%	Schizophrenia (100%)	Substance abuse (5.0%); Alcohol abuse (4.9%)	Antipsychotics (76.8%); integrated treatment (26.8%)	16.2 y	4 y	32.9%	Attention and vigilance; executive functioning; processing speed; social cognition; verbal memory; visual memory
Granhölm 2020 ⁵³⁰	107–101	56.0 (7.5)	17.5%	Schizophrenia (80.7%); schizoaffective disorder (19.3%)	NR	Cognitive-behavioral social skills training (CBSST; 45.6%); mobile assisted CBSST (MA-CBSST; 29.8%)	NR	0.3 y; 0.5 y; 1 y	40.4%	Overall cognition
Harvey 2010 ⁵³¹	61–61	57.0 (9.0)	27.0%	Schizophrenia (100%)	NR	Second-generation antipsychotics (100%)	33.3 y	3.8 y	45.0%	Overall cognition
Heaton 2001 ⁵³²	142–142	47.6 (15.7)	30.3%	Schizophrenia (100%)	NR	Atypical antipsychotics (17.6%)	18.8 y	1.6 y	47.2%	Overall cognition
Heeramun-Aubeeluck 2015 ⁵³³	38–38	25.9 (7.3)	51.5%	Schizophrenia (100%)	NR	Aripiprazole (33.7%); olanzapine (32.7%); risperidone (32.7%)	NR	0.5 y; 1 y	62.4%	Attention and vigilance; motor skills and construction; processing speed; verbal memory; visual memory
Ho 2018 ⁵³⁴	34–34	27.0 (6.6)	61.8%	Schizophrenia (100%)	no	Antipsychotics (100%)	1.3 y	1.7 y	17.1%	Social cognition
Hoff 2005 ⁵³⁵	21–21	37.9 (5.7)	28.6%	Schizophrenia (74.3%); schizoaffective disorder (5.7%)	NR	Antipsychotics (92.9%)	1.5 y	10 y	58.0%	Executive functioning; motor skills and construction; overall cognition; processing speed; sensation and perception; verbal memory; visual memory
Horan 2012 ⁵³⁶	55–55	22.3 (4.3)	23.6%	Schizophrenia (56.8%); schizoaffective disorder (12.4%); schizophreniform disorder (30.9%)	NR	Risperidone (100%)	0.7 y	1 y	32.1%	Social cognition
Hui 2012 ⁵³⁷	37–37	32.1 (10.4)	48.7%	Schizophrenia spectrum disorder (100%)	NR	Antipsychotics (48.7%)	0.0 y	1 y; 2 y; 3 y	NR	Sensation and perception

(continued)

Table 1 (continued).

Study name ^a	N (baseline FU)	Age (SD)	% female	Primary diagnosis	Comorbidity	Treatment	Baseline DOI (y)	FU duration (y)	Attrition rate	Outcome categories reported
Keefe 2004 ^{538,539}	167–167	23.9 (4.6)	16.2%	Schizophrenia (64.7%); schizoaffective disorder (8.4%); schizophreniform disorder (27.0%)	NR	Olanzapine (53.3%); haloperidol (46.7%)	1.2 y	0.5 y; 1 y	31.6%	Attention and vigilance; executive functioning; language skills; motor skills and construction; overall cognition; processing speed; sensation and perception; verbal memory; visual memory
Klingberg 2008 ⁵⁴⁰	151–100	33.6 (10.3)	51.7%	Schizophrenia (88.7%); schizoaffective disorder (11.3%)	NR	Antipsychotics (94.7%); anticholinergics (31.1%); benzodiazepines (47.7%); antidepressants (19.9%); mood stabilizers (9.3%)	8.1 y	0.8 y; 1.3 y; 1.5 y	50.9%	Attention and vigilance; executive functioning; processing speed; verbal memory; visual memory
Kukla 2018 ⁵⁴¹	75–67	50.2 (10.3)	6.7%	Schizophrenia (70.7%); schizoaffective disorder (29.3%)	NR	Cognitive behavioral therapy (66.7%); cognitive remediation (33.3%)	NR	0.5 y; 1 y	10.7%	Attention and vigilance; executive functioning; overall cognition; processing speed; social cognition; verbal memory; visual memory
Kurtz 2005 ⁵⁴²	12–12	29.9 (5.9)	NR	Schizophrenia (100%)	NR	Typical antipsychotics (67.0%); clozapine (33.0%)	8.0 y	10 y	75.5%	Attention and vigilance; executive functioning; motor skills and construction; overall cognition; processing speed; sensation and perception; verbal memory; visual memory
Leeson 2009 ⁵⁴³	54–54	25.5 (8.0)	18.5%	Schizophrenia (96.3%); schizoaffective disorder (3.7%)	NR	First-generation antipsychotics (50.0%); second-generation antipsychotics (35.2%)	<0.3 y	1 y; 4 y	7.0%	Executive functioning; overall cognition; visual memory
Lindgren 2020 ⁵⁴⁴	52–32	26.7 (5.7)	40.4%	Schizophrenia (50.0%); schizophreniform disorder (21.1%); psychotic disorder NOS (23.1%); brief psychotic disorder (5.8%)	NR	Antipsychotics (94.2%); antidepressants (26.9%)	0.0 y	1 y	38.5%	Attention and vigilance; executive functioning; language skills; motor skills and construction; processing speed; verbal memory; visual memory
Lysaker 1994 ⁵⁴⁵	92–92	43.3 (9.2)	6.5%	Schizophrenia or schizoaffective disorder (100%)	NR	NR	NR	0.4 y; 1 y	22.0%	Executive functioning
McGurk 2003 ⁵⁴⁶	30–27	39.7 (6.9)	23.3%	Schizophrenia (53.3%); schizoaffective disorder (46.7%)	NR	Supported employment (100%); antipsychotics (100%); clozapine (23.3%); risperidone (26.7%); olanzapine (13.3%)	15.7 y	2 y	10.0%	Executive functioning; processing speed; verbal memory
Meagher 2004 ⁵⁴⁷	82–82	68.7 (10.1)	41.9%	Schizophrenia (100%)	NR	Antipsychotics (100%)	44.7 y	2.9 y	36.4%	Executive functioning; overall cognition
Okin 1995 ⁵⁴⁸	53–53	37.6 (14.2)	41.5%	Schizophrenia (100%)	NR	Community residential treatment (100%)	11.5 y	7.5 y	0.0%	Language skills; motor skills and construction; overall cognition

(continued)

Table 1 (continued).

Study name ^a	N (baseline FU)	Age (SD)	% female	Primary diagnosis	Comorbidity	Treatment	Baseline DOI (y)	FU duration (y)	Attrition rate	Outcome categories reported
Olbrich 2001 ⁵⁴⁹	36–36	28.1 (7.1)	43.9%	Schizophrenia (100%)	NR	Neuroleptics (100%)	2.1 y	0.5 y; 1 y; 1.5 y	3.0%	Attention and vigilance
Oribe 2015 ⁵⁵⁰	18–18	21.7 (4.6)	27.8%	Schizophrenia (100%)	NR	Atypical antipsychotics (72.2%); mood stabilizers (5.6%); antidepressants (33.3%); Anxiolytics (16.7%)	1.2 y	1 y	0.0%	Visual memory
Rodríguez-Sánchez 2008 ^{551–554}	549–549	30.1 (9.6)	43.4%	Schizophrenia (50.6%); schizophreniform disorder (28.1%); brief psychotic disorder (11.1%); psychotic disorder NOS (8.4%); schizoaffective disorder (1.5%); delusional disorder (0.4%)	Cannabis use (43.0%)	Antipsychotics (100%); anticholinergics (6.5%); hypnotics (15.5%); benzodiazepines (52.9%)	1.8 y	0.1 y; 1 y; 3 y; 10 y	27.5%	Attention and vigilance; executive functioning; motor skills and construction; overall cognition; processing speed; verbal memory; visual memory
Rund 1989 ⁵⁵⁵	14–14	24.3 (3.8)	14.3%	Schizophrenia (100%)	NR	Neuroleptics (71.4%)	NR	4 y	30.0%	Executive functioning; verbal memory
Rund 2007 ⁵⁵⁶	111–111	28.2 (9.0)	42.3%	Schizophrenia (52.3%); schizophreniform disorder (4.5%); schizoaffective disorder (10.8%); delusional disorder (5.4%); psychosis NOS (27.0%)	Affective disorder (18.9%)	TIPS treatment program: antipsychotic medication, individual psychosocial treatment, and psychoeducational family work; psychotherapy (100%)	0.2 y	0.3 y; 1 y	38.9%	Attention and vigilance; executive functioning; motor skills and construction; processing speed; sensation and perception; Verbal memory
Ryu 2006 ^{557–559}	78–78	54.6 (7.2)	34.6%	Schizophrenia (100%)	NR	Optimal Treatment Project (OTP; 100%); antipsychotics (100%)	31.5 y	1 y; 2 y; 3 y; 4 y; 5 y; 6 y; 12 y; 15 y	28.2%	Executive functioning; language skills; overall cognition; processing speed; verbal memory; visual memory
Scottish Schizophrenia Research Group 1988 ⁵⁶⁰	111–111	30.6 (NR)	53.1%	Schizophrenia (100%)	NR	Pimozide (50.0%); flupenthixol (50.0%)	0.2 y	1 y; 2 y; 5 y	16.3%	Executive functioning; motor skills and construction; overall cognition; verbal memory
Seidman 1991 ⁵⁶¹	12–12	28.7 (6.5)	16.7%	Schizophrenia (100%)	NR	Neuroleptics (91.7%)	8.8 y	3 y	0.0%	Attention and vigilance; executive functioning; language skills; motor skills and construction; overall cognition
Shrivastava 2011 ⁵⁶²	61–61	28.8 (7.5)	26.7%	Schizophrenia (100%)	NR	Pharmacologic treatment (100%)	0.0 y	10 y	49.5%	Motor skills and construction
Smith 2002 ⁵⁶³	46–45	37.0 (9.0)	41.3%	Schizophrenia (60.9%); schizoaffective disorder (39.1%)	NR	Standard ambulatory treatment (medication management, case management, psychotherapy; 100%); vocational rehabilitation (100%); antipsychotics (100%)	19.0 y	0.3 y; 0.5 y; 0.8 y; 1 y	37.5%	Executive functioning; verbal memory
Stip 2005 ⁵⁶⁴	57–57	34.0 (12.0)	29.8%	Schizophrenia (77.2%); schizoaffective disorder (22.8%)	NR	NR	6.4 y	0.7 y; 1.3 y; 1.6 y	0.0%	Executive functioning; processing speed; verbal memory

(continued)

Table 1 (continued).

Study name ^a	N (baseline FU)	Age (SD)	% female	Primary diagnosis	Comorbidity	Treatment	Baseline DOI (y)	FU duration (y)	Attrition rate	Outcome categories reported
Stirling 2003 ⁵⁶⁵	49–49	26.3 (NR)	42.9%	Schizophrenia (81.6%); schizoaffective disorder (12.2%); schizophreniform disorder (6.1%)	NR	Neuroleptics (98.0%)	0.0 y	10.6 y	21.0%	Executive functioning; motor skills and construction; overall cognition; sensation and perception; verbal memory; visual memory
Sweeney 1991 ⁵⁶⁶	39–39	28.6 (8.6)	38.5%	Schizophrenia (74.4%); schizophreniform disorder (10.3%); schizoaffective disorder (15.4%)	NR	Antipsychotics (100%)	6.6 y	0.3 y; 1 y; 1.3 y; 1.5 y	0.0%	Executive functioning; language skills; motor skills and construction; processing speed; sensation and perception; verbal memory; visual memory
Torgalsbøen 2015 ⁵⁶⁷	25–25	21.0 (2.6)	39.3%	Schizophrenia (75.0%); schizoaffective disorder (21.4%); psychotic disorder NOS (3.6%)	Substance abuse (3.6%)	Psychotherapy (71.4%); group therapy (7.1%); psychoeducation (64.3%)	<0.4 y	2 y	10.7%	Attention and vigilance; executive functioning; overall cognition; social cognition; verbal memory; visual memory
Tyson 2005 ⁵⁶⁸	28–28	34.0 (10.0)	35.7%	Schizophrenia (100%)	NR	Antipsychotics (100%)	8 y	0.8 y; 1.5 y	0.0%	Executive functioning; language skills; verbal memory; visual memory
Van Haren 2019 ⁵⁶⁹	1022–622	27.7 (7.8)	23.5%	Schizophrenia (71.6%); Schizoaffective disorder (15.1%); psychosis NOS (13.3%)	NR	NR	4.3 y	3 y; 6 y	42.3%	Overall cognition
Van Winkel 2006 ^{570,571}	80–48	23.2 (4.0)	30.0%	Schizophrenia (100%)	NR	NR	NR	10.7 y	47.0%	Overall cognition
Veerman 2016 ⁵⁷²	25–25	42.0 (10.4)	24.0%	Schizophrenia (100%)	Alcohol use (20.0%); nicotine use (56.0%); cocaine use (12.0%)	Clozapine (100%); psychotherapy (8.0%)	19.6 y	1 y	19.4%	Executive functioning; social cognition; verbal memory; visual memory
Veijola 2014 ⁵⁷³	28–28	34.0 (0.6)	42.4%	Schizophrenia (100%)	NR	Antipsychotics (100%)	11.1 y	9 y	45.9%	Overall cognition
Waddington 1996 ⁵⁷⁴	41–41	54.1 (12.5)	46.3%	Schizophrenia (100%)	NR	Anticholinergics (51.0%)	27.9 y	10 y	59.4%	Overall cognition
Wittorf 2004 ⁵⁷⁵	11–11	31.9 (10.9)	66.7%	Schizophrenia (93.3%); schizoaffective disorder (6.7%)	NR	Antipsychotics (100%)	6.1 y	1.1 y	60.5%	Attention and vigilance; executive functioning; verbal memory; visual memory
Xu 2014 ^{576,577}	60–60	25.3 (10.4)	45.0%	Schizophrenia (51.7%); schizophreniform disorder (20.0%); psychosis NOS (21.7%); schizoaffective disorder (6.7%)	NR	Antipsychotics (95.0%); anticholinergics (18.3%)	0.0 y	1 y; 3 y	23.1%	Executive functioning; language skills; overall cognition
Zhuo 2018 ⁵⁷⁸	48–48	21.5 (1.7)	52.1%	Schizophrenia (100%)	NR	NR	0.0 y	3 y	0.0%	Sensation and perception

^aSupplementary references appear with an “S” preceding them and can be found at Psychiatrist.com.

Abbreviations: CRT = cognitive rehabilitation therapy, DOI = duration of illness, FU = follow-up, NOS = not otherwise specified, NR = not reported, SRT = standard rehabilitation therapy, TIPS = Early Treatment and Identification of Psychosis, y = years.