Supplementary Table S1Characteristics of Participant Samples and Interventions in Included Studies

Study	Mean CA in	Mean LA in	Interventionist	Total Intervention
Authors, Year	Months	Months	Туре	Hours
Boyd et al., 2018	49.6		Educator	17.2
Brian et al., 2017	25.2	13.1	Caregiver	
Brian et al., 2018	49.6		Educator	17.2
Chang et al., 2016	50	31.5	Educator	
Dawson et al., 2010	23.5		Combination	3276
Drew et al., 2002	22.5		Caregiver	
Duifhuis et al., 2017	69.5		Caregiver	
Estes et al., 2015	23.5		Combination	3276
Hardan et al., 2015	49.2		Caregiver	
Howlin & Rutter, 1989	75.4	31.4	Caregiver	
Ingersoll, 2012	38	16.8	Clinician	30
Ingersoll et al., 2016	43.7		Caregiver	
Jocelyn et al., 1998	43.3		Combination	
Kaale et al., 2014	48.8	21.5	Educator	25
Kasari et al., 2008	42.6	20.1	Clinician	14.3
Kasari et al., 2008	42.3	20.5	Clinician	17.35
Kasari et al., 2015	31.5	13.9	Caregiver	
Landa et al., 2011	28.8		Clinician	205.66
Lawton & Kasari, 2012	44.7		Educator	8.3
Nefdt et al., 2010	38.7		Caregiver	
Roberts et al., 2011	42.6		Combination	36
Roberts et al., 2011	43.4		Clinician	72
Rogers et al., 2006	38.4	12	Caregiver	75
Rogers et al., 2012	21		Caregiver	
Schreibman & Stahmer, 2014	29.2		Combination	247
Shire et al., 2017	31.6	16.9	Educator	19.25
Vivanti et al., 2014	41.2	19	Combination	1023.4
Wetherby & Woods, 2006	18.19		Caregiver	

Note. Studies are listed twice when more than one intervention group was evaluated in reference to a comparison. CA = chronological age, LA = Language age equivalent, --- = Information was not reported.

Forest plot of RVE summary estimate for cognitive outcomes

Authors and Year		Effect Size [95% CI]
hook at the control of the control o		3 60 13 129 5
Brian et al., 2017		-0.24 [-0.73, 0.26]
Gulsrud et al., 2014 ⊢		-0.09 [-0.86, 0.67]
Jocelyn et al., 1998	-	0.02 [-0.63, 0.67]
Rogers et al., 2012	├ - 	0.08 [-0.35, 0.52]
Rogers et al., 2012	⊢■ −−1	0.11 [-0.33, 0.54]
Vivanti et al., 2014	⊢ =	0.16 [-0.36, 0.67]
Gulsrud et al., 2014	-	0.21 [-0.54, 0.97]
Landa et al., 2011	- ■	0.25 [-0.31, 0.80]
Estes et al., 2015	├	0.29 [-0.33, 0.91]
Landa et al., 2011	- ■ 	0.31 [-0.24, 0.86]
Vivanti et al., 2014	 ■ 	0.37 [-0.15, 0.89]
Dawson et al., 2010	- ■ 	0.40 [-0.18, 0.99]
Estes et al., 2015	 ■ 	0.42 [-0.21, 1.04]
Estes et al., 2015	├ ■	0.42 [-0.20, 1.05]
Kasari et al., 2008		0.43 [-0.24, 1.11]
Vivanti et al., 2014	l . ■ 1	0.44 [-0.08, 0.96]
Kasari et al., 2008		0.50 [-0.18, 1.18]
Vivanti et al., 2014		0.50 [-0.02, 1.02]
Kasari et al., 2008		0.52 [-0.16, 1.20]
Kasari et al., 2008	⊢ =	0.54 [-0.12, 1.19]
Dawson et al., 2010	—	0.59 [0.00, 1.18]
Kasari et al., 2008		0.66 [-0.00, 1.32]
Wetherby & Woods, 2006		0.67 [0.00, 1.33]
Drew et al., 2002	ı 	0.71 [-0.09, 1.51]
Wetherby & Woods, 2006	├──	0.83 [0.15, 1.50]
Kasari et al., 2008	├	0.84 [0.17, 1.51]
Robust Variance Estimate		0.26 [0.01, 0.51]
-1	0 0.5 1 1.5 2)
·		-
	Observed Outcome	

Forest plot of RVE summary estimate for ASD symptomatology outcomes

Authors and Year		Effect Size [95% CI]
Duifbuig et al. 2017		0.04[1.77 0.10]
Duifhuis et al., 2017 ⊢	-	-0.94 [-1.77, -0.10]
Duifhuis et al., 2017	ı	-0.75 [-1.57, 0.07]
Vivanti et al., 2014	⊢ ■ 1	-0.37 [-0.89, 0.15]
Brian et al., 2017	⊢ ■	-0.08 [-0.57, 0.42]
Duifhuis et al., 2017	├	0.07 [-0.75, 0.89]
Dawson et al., 2010	├	0.16 [-0.42, 0.74]
Jocelyn et al., 1998	-	0.19 [-0.46, 0.84]
Jocelyn et al., 1998	⊢	0.40 [-0.25, 1.06]
Hardan et al., 2015	! ─■─┤	0.48 [-0.09, 1.05]
Estes et al., 2015	⊢	0.69 [0.06, 1.33]
Robust Variance Estimate	•	0.05 [-0.38, 0.48]
-2	-1 0 1	2
	Observed Outcome	

Forest plot of RVE summary estimate for adaptive behavior outcomes

Authors and Year	Effect Size [95% CI]
Rogers et al., 2012 ⊢■	-0.27 [-0.71, 0.16]
Rogers et al., 2012 ⊢■	-0.13 [-0.56, 0.30]
Vivanti et al., 2014 ⊢ ■	-0.06 [-0.59, 0.47]
Jocelyn et al., 1998 ⊢ -	-0.04 [-0.69, 0.61]
Vivanti et al., 2014 ⊢ -	0.06 [-0.47, 0.59]
Ingersoll et al., 2016	0.25 [-0.49, 0.98]
Estes et al., 2015	0.27 [-0.39, 0.93]
Estes et al., 2015	0.58 [-0.10, 1.26]
Wetherby & Woods, 2006	0.62 [-0.05, 1.28]
Dawson et al., 2010 ⊢	0.62 [0.03, 1.21]
Dawson et al., 2010 ⊢ ■	0.72 [0.13, 1.32]
Wetherby & Woods, 2006	0.78 [0.10, 1.45]
Robust Variance Estimate	0.16 [-0.24, 0.56]
-1 0 0.5 1 1.5	
Observed Outcome	

Forest plot of RVE summary estimate for social-emotional and challenging behavior outcomes

Authors and Year		Effect Size [95% CI]	
Roberts et al., 2011		-0.57 [-1.10, -0.05]	
11000110 01 41., 2011	· - '	-0.07 [-1.10, -0.00]	
Roberts et al., 2011	├ ■	-0.37 [-0.89, 0.16]	
Jocelyn et al., 1998	├	0.00 [-0.65, 0.65]	
Boyd et al., 2018	⊢■→	0.14 [-0.21, 0.50]	
Boyd et al., 2018	⊢ ■ →	0.18 [-0.17, 0.54]	
Boyd et al., 2018	⊢ ■→1	0.29 [-0.07, 0.65]	
Estes et al., 2015	├	0.34 [-0.34, 1.02]	
Ingersoll, 2012	-	0.40 [-0.35, 1.16]	
Duifhuis et al., 2017		0.52 [-0.32, 1.35]	
Estes et al., 2015	l = 1	0.64 [-0.06, 1.33]	
Duifhuis et al., 2017	l 	0.78 [-0.07, 1.64]	
Duifhuis et al., 2017	<u> </u>	0.92 [0.05, 1.78]	
Robust Variance Estim	nate	0.17 [-0.28, 0.61]	
-2	-1 0 1 2		
Observed Outcome			

Forest plot of RVE summary estimate for play skill outcomes

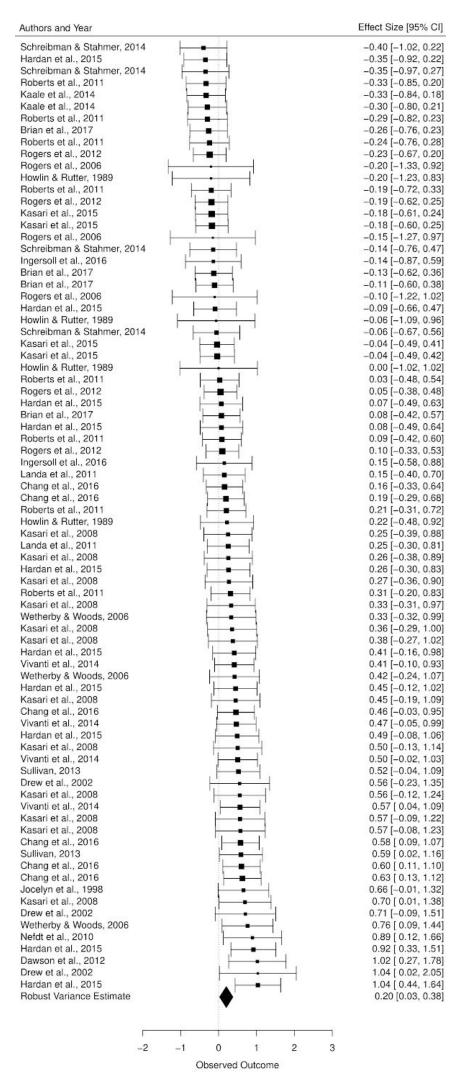
Authors and Year		Effect Size [95% CI]
Chang et al., 2016	⊢■ •	-0.53 [-1.02, -0.04]
Kasari et al., 2010	` •	-0.24 [-0.86, 0.39]
Shire et al., 2017	` 	-0.18 [-0.55, 0.19]
Shire et al., 2017	' <u>_</u>	-0.02 [-0.38, 0.35]
Shire et al., 2017		-0.01 [-0.38, 0.35]
Kasari et al., 2015	<u> </u>	0.00 [-0.45, 0.45]
Boyd et al., 2018		0.02 [-0.31, 0.35]
		0.02 [-0.31, 0.33]
Chang et al., 2016	T. I.	
Shire et al., 2017	<u> </u>	0.04 [-0.33, 0.41]
Boyd et al., 2018	,r _ _7,	0.06 [-0.27, 0.39]
Kasari et al., 2015	<u> </u>	0.08 [-0.38, 0.53]
Boyd et al., 2018	, F = -1 ,	0.08 [-0.24, 0.41]
Kasari et al., 2006		0.14 [-0.49, 0.77]
Kasari et al., 2006	 •	0.18 [-0.45, 0.82]
Kasari et al., 2006	<u> </u>	0.22 [-0.42, 0.85]
Shire et al., 2017	 -	0.22 [-0.15, 0.58]
Kasari et al., 2008	 • 	0.22 [-0.69, 1.13]
Chang et al., 2016	- 	0.24 [-0.25, 0.72]
Kasari et al., 2015		0.26 [-0.17, 0.69]
Chang et al., 2016	-	0.27 [-0.22, 0.75]
Kasari et al., 2006	<u> </u>	0.27 [-0.36, 0.91]
Kasari et al., 2006	<u> </u>	0.29 [-0.35, 0.92]
Kasari et al., 2006	 	0.33 [-0.30, 0.96]
Shire et al., 2017	—	0.34 [-0.03, 0.71]
Shire et al., 2017		0.36 [-0.01, 0.73]
Shire et al., 2017	} ■-	0.39 [0.02, 0.76]
Kasari et al., 2015	<u> </u>	0.39 [-0.04, 0.82]
Shire et al., 2017	1	0.40 [0.03, 0.77]
Kasari et al., 2006	<u> </u>	0.44 [-0.19, 1.08]
Kasari et al., 2008	<u> </u>	0.47 [-0.17, 1.10]
Kasari et al., 2006		0.48 [-0.15, 1.12]
Kasari et al., 2008	<u> </u>	0.49 [-0.16, 1.13]
Kasari et al., 2008		0.50 [-0.16, 1.15]
Shire et al., 2017	\\	0.51 [0.14, 0.88]
Kasari et al., 2008		0.55 [-0.11, 1.20]
Kasari et al., 2008	[0.57 [-0.08, 1.22]
Kasari et al., 2008	<u> </u>	0.57 [-0.07, 1.22]
Kasari et al., 2006		0.58 [-0.07, 1.22]
Kasari et al., 2008		874
		0.59 [-0.07, 1.25]
Kasari et al., 2006	•	0.62 [-0.02, 1.27]
Kasari et al., 2008		0.65 [0.01, 1.30]
Chang et al., 2016	<u> </u>	0.67 [0.17, 1.16]
Kasari et al., 2015	├ ──	0.67 [0.20, 1.14]
Kasari et al., 2006	-	0.67 [0.02, 1.33]
Chang et al., 2016	<u> </u>	0.69 [0.19, 1.19]
Kasari et al., 2008	-	0.71 [0.02, 1.39]
Kasari et al., 2006	├	0.72 [0.07, 1.37]
Kasari et al., 2008	 • −	0.73 [0.06, 1.39]
Kasari et al., 2010	 • 	0.84 [0.19, 1.49]
Kasari et al., 2015	├ ■	1.01 [0.56, 1.47]
Kasari et al., 2008	 • 	1.31 [0.58, 2.05]
Shire et al., 2017	 ■ 	1.53 [1.11, 1.95]
Shire et al., 2017	<u> </u>	2.90 [2.37, 3.43]
Robust Variance Estimate	▼	0.33 [0.13, 0.54]
		1
	-2 -1 0 1 2 3	4

Supplementary Figure S6

Forest plot of RVE summary estimate for restricted and repetitive behavior outcomes

Authors and Year		Effect Size [95% CI]	
Duifhuis et al., 2017	-	-0.75 [-1.56, 0.07]	
Brian et al., 2017	├ ─ ■ ──I	-0.42 [-0.92, 0.08]	
Vivanti et al., 2014	⊢-≡	-0.27 [-0.78, 0.25]	
Rogers et al., 2012	⊢■	-0.07 [-0.50, 0.36]	
Duifhuis et al., 2017		-0.06 [-0.88, 0.77]	
Drew et al., 2002	├ = -	0.15 [-0.62, 0.93]	
Howlin & Rutter, 1989	├	0.18 [-0.52, 0.88]	
Dawson et al., 2010	, ,	0.35 [-0.23, 0.93]	
Howlin & Rutter, 1989	 	0.45 [-0.25, 1.16]	
Estes et al., 2015	J 	0.60 [-0.08, 1.27]	
Duifhuis et al., 2017	 -1	0.61 [-0.20, 1.42]	
Estes et al., 2015	⊢ ■ -	0.75 [0.11, 1.39]	
Robust Variance Estimat	te	-0.01 [-0.34, 0.32]	
-2	_1 0 1	2	
Observed Outcome			

Forest plot of RVE summary estimate for language outcomes



Forest plot of RVE summary estimate for social communication outcomes

Authors and Year	Effect Size [95% CI]
Chaing et al., 2015 Durflus et al., 2017 Durflus et al., 2017 Durflus et al., 2017 Durflus et al., 2017 Roberts et al., 2016 Roberts et al., 2016 Roberts et al., 2017 Roberts et al., 2018 Roberts et al., 2019 Roberts et al., 2011 Roberts et al., 2010 Roberts et al., 2011 Rosans et al., 2006 Roberts et al., 2011 Rosans et al., 2006 Roberts et al., 2010 Rosale et al., 2014 Rosans et al., 2006 Roberts et al., 2016 Rosale et al., 2017 Rosale et al., 2016 Rosale et al., 2017 Rosale et al., 2016 Rosale et al., 2017 Rosale et al., 2016 Rosale et al., 2016 Rosale et al., 2017 Rosale et al., 2018 Rosale et al., 2019 Rosale et al., 2018 Rosale et al., 2018 Rosale et al., 2019 Ros	-0.90 -1.62 0.00 -0.79 -1.62 0.00 -0.79 -1.62 0.00 -0.79 -1.62 0.00 -0.79 -1.62 0.00 -0.79 -1.62 0.00 -0.79 -1.63 0.00 -0.71 -1.63 0.00 -0.72 -1.38 0.00 -0.72 -1.38 0.00 -0.72 -1.08 0.00 -0.72 -1.08 0.00 -0.72 -1.08 0.00 -0.72 -1.08 0.00 -0.72 -1.08 0.10 -0.73 -0.08 0.10 -0.73 -0.08 0.10 -0.74 -0.08 0.10 -0.75 -0.08 0.10 -0.77 -0.08 0.10 -0.77 -0.08 0.10 -0.77 -0.08 0.10 -0.77 -0.08 0.40 -0.77 -0.08 0.00 -0.77 -0.08 0.00 -0.77 -0.08 0.00 -0.77 -0.08 0.00 -0.77 -0.08 0.00 -0.77 -0.08 0.00 -0.77 -0.08 0.00 -0.77 -0.08 0.00 -0.77 -0.08 0.00 -0.77 -0.08 0.00 -0.77 -0.08 0.00 -0.77 -0.08 0.00 -0.77 -0.08 0.00 -0.77 -0.08 0.00 -0.77 -0.08 0.00 -0.77 -0.08 0.00 -0.77 -0.08 0.00 -0.77 -0.08 0.00

